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Farmers and Forests in Neolithic Europe

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THE role of Neolithic man as a breeder of domesticated animals and plants has long been recognized as one of high significance in the evolution of culture, and the spread of farming has been commonly accepted as marking one of the most significant stages in European prehistory. Much less attention has been paid to the manner in which the earliest farmers pioneered the European wastes and, in creating the conditions needful for their way of life, laid the foundations for later prehistoric settlement. One reason for this is the widely held theory that Neolithic man was only capable of colonizing 'open' country, having perforce to avoid forest areas. It will be my aim in this article to show that this theory rests on false premises, and that, far from being hostile, forests played a vital part in the spread of farming from the genial centres of the ancient world over the savage spaces of northern Europe.

If the idea that Neolithic man shunned the forest has exercised something of a hypnotic influence on the study of early settlement, this may be due in part to the characteristically circular form of argument in which some of its chief protagonists have indulged. Broadly speaking it has been argued that, since Neolithic man was unable to clear the forest for himself, he can only have settled areas naturally 'open' or free from forest trees, and, conversely, that areas known to have been settled by Neolithic man, cannot have been forested at the time of his settlement. Particularly subtle has been the way in which the theory, in reality so unscientific, managed to secure at least the appearance of sanction from the natural sciences; hypotheses founded on botanical and geological data were systematically seized upon to justify the thesis of an 'open' countryside at the time of the Neolithic colonization, and the framers of these very hypotheses were encouraged to draw comfort from the supposed 'fact', in reality only a prejudice, that early man was incapable of settling forest country. Here we see in truth the baleful results which accrue from false cooperation, in reality mere collusion, between the human and natural sciences, when, instead of each testing the hypotheses of the other in terms of data established by its own discipline, each uses the hypothesis of the other as the foundation of proof for its own theory.

One example of this is given by the loess, that famous 'corridor' through the forests of central Europe, along which the Danubian farmers are supposed to have advanced unhindered by any necessity of clearing the land of forest trees. The legend appears to have originated in a gratuitous pronouncement by the celebrated geologist A. Penck in

1887 (1). Remarking on the proclivity of the Neolithic settlers of central Europe for the loess, Penck volunteered the astonishing statement that, since it was unlikely that the colonizers would have recognized 'instinctively' that certain parts of the forest were more suitable than others for cultivation, it was quite probable that the loess was as free from forest as the prairies of North America (1^a). While agreeing that the early farmers could hardly have been guided 'instinctively' to the most likely cultivable soils, one must protest that natural vegetation, which could well have been forest, might have afforded an outstanding clue. According to Carl Schott (2), the English pioneers in Ontario of the late 18th-early 19th centuries selected ground for cultivation precisely on the criterion of observed forest growth (2^a). Equally unfortunate is Penck's reference to the prairies. One of Schott's most interesting points is that before the European colonization the North American prairies were in fact given over to hunting peoples, cultivation being carried on in plots cleared from the forest by the Indians. It is true that Penck did no more than suggest the forest-free character of the loess in Neolithic times, but his hypothesis was eagerly appropriated as a ready 'explanation' of the Danubian colonization, and there is no doubt that his reputation as a geologist gave it an impetus in no way merited by his argument. One may even suspect that its transformation into an article of faith was assisted by a certain confusion in the minds of some of those concerned between the conditions which gave rise to the loess and those which obtained at the time of its colonization by Neolithic man. When in 1905 J. Hoops (3) published his classic book on the trees and cultivated plants of German antiquity, he accepted as a fact that the earliest farmers of southern Germany settled the loess because it was free from forest rather than for its fertility or ease of working.

More far-reaching in its effects on the study of early settlement in Europe was the *Steppenheidetheorie* put forward by R. Gradmann (4) and distorted by a tribe of followers in the field of *Siedlungsgeschichte*. It was of the essence of Gradmann's thesis that

¹ A. Penck, 'Das Deutsche Reich' in A. Kirchhoff's *Länderkunde des Erdteils Europa*, 1, 1887, s. 441. I have been unable to check the reference and have had to rely upon the excerpt quoted by J. Hoops, *Waldbäume und Kulturpflanzen im germanischen Altertum*. Strasbourg, 1905, s. 98-99.

^{1a} Penck is quoted as having written of the early farmers that . . . 'wenn nicht gerade abgenommen werden soll, das dieselbe instinktiv innerhalb grosser Waldflächen den besten Feldboden rodet, so ist wohl wahrscheinlich, das sie die Lössdistrikte in waldfreien Zustände als Wiesengebiete vorfand, ähnlich den Prärien des nordamerikanischen Westens'. Op. cit. s. 441.

² C. Schott, 'Urlandschaft und rodung. Vergleichende betrachtungen aus Europa und Kanada', *Z. d. Ges. f. Erdkunde zu Berlin*, 1935, s. 81-102. See s. 100.

^{2a} Dr H. Godwin, F.R.S., to whom I am deeply indebted for reading this article in typescript and offering valuable criticism, tells me that the great American ecologist F. E. Clements based his work on 'Plant Indicators' on this very possibility. In modern American and Continental forestry practice it is usual to estimate the condition and potentialities of the soil from the nature of the ground flora. We may be sure that early man accumulated sufficient lore on this subject to enable him to decide where to make his clearances.

³ J. Hoops, op. cit. s. 99: 'Es ist also nicht sowohl der fruchtbare Lössboden als solcher, sondern der waldfreie Charakter seiner Oberfläche, mit andern Worten, es sind die einstigen Tundra- und Steppenflächen, die den ackerbauenden Neolithiker genau so, wie früher den paläolithischen Menschen, in erster Linie anzogen'.

⁴ R. Gradmann, *Das Pflanzenleben der schwabischen Alb*. Ist. ed., 1898, 2nd ed. 1900, 3rd ed. 1936; 'Das mitteleuropäische landschaftsbild nach seiner geschichtlichen Entwicklung', *Geogr. Z.* 7 (1901), 361-377 and 435-447; 'Beziehung zwischen Pflanzengeographie und Siedlungsgeschichte', *Geogr. Z.* 12 (1906), 305-325, etc.

prehistoric settlement was virtually confined to open country of a steppe-like character, among which the loess was of course included. He relied to a great extent on the coincidence in central and southern Germany of what he regarded as relicts of a *Steppenheide* flora, a mixed association of shrubs, grasses and bushes with an occasional stunted tree, with the settlement areas of early man; both man and plants spread, according to his view, during a warm, dry climatic phase hostile to forest growth. Of almost equal importance to his thesis was the dogma that human communities at a low stage of culture were incapable of clearing the forest: it was the decline of forests under the influence of dry, warm conditions, which alone made it possible for Neolithic man to settle in Europe. In order to account for the continued occupation of the cultivated zones during a period when the forests recovered to attain the flourishing state reflected in the writings of classical authors, it was conceded that the pre-Roman inhabitants of Europe were capable of resisting encroachments by the forest, even if incapable of initiating clearance.

Gradmann's thesis appeared to find some support from researches on the gross stratigraphy of Scandinavian and German raised bogs (*Hochmoore*). On the basis of his own work on the bogs of south Sweden and on the researches of A. Blytt on the post-glacial deposits of Norway, R. Sernander advanced his celebrated hypothesis of a twice-repeated cycle of continental (Boreal and Sub-boreal) and oceanic (Atlantic and Sub-atlantic) climatic phases since the Ice Age in Scandinavia (5). When in 1923 Gams and Nordhagen (6) extended this sequence to southern Germany, they were in effect claiming that it was valid for regions remote from the Baltic, and independent of the well-known geographical changes which marked the post-glacial period in that part of the world. Meanwhile, C. A. Weber (7) had stressed the importance of the *Grenzhorizonte*, dividing the older from the newer *Sphagnum* peat in the north German raised bogs; this he claimed to mark the close of a period of at least a thousand years, during which peat had ceased to form. Students of *Siedlungsgeschichte* (8) were not slow to equate this period with Sernander's Sub-boreal phase, accepting it as further proof that climate was substantially drier during Neolithic times than to-day. Evidently, it was the return of continental conditions during the Sub-boreal period, which brought about the replacement of forests by an open vegetation of *Steppenheide* character, and so, in Reinerth's graphic—but, as so often, wildly inaccurate—phrase, opened the door to the Neolithic settlers (9)!

Weber's interpretation of the *Grenzhorizonte* was by no means unchallenged by his fellow-workers, but since the phenomenon only dates in general terms from the close of the Bronze Age, and is one which in any case should be handled by a professional botanist, it will not be further discussed here. What concerns us more closely is the duration of the Sub-boreal phase, which the *Grenzhorizonte* is supposed to have brought to an end. Apart from the question, whether in fact a Sub-boreal phase in the sense used by Sernander ever existed, which is doubted by an increasing number of authorities,

⁵ R. Sernander, *Die schwedischen Torfmoore als Zeugen postglazialer Klimaschwankungen*. Geologkongr. Stockholm, 1910.

⁶ H. Gams and R. Nordhagen, 'Postglaziale Klimaänderungen und Erdkrustenbewegungen in Mitteleuropa', *Mitt. Geogr. Ges.* Munich, 1923.

⁷ C. A. Weber, 'Was lehrt der Aufbau der Moore Norddeutschlands über den Wechsel des Klimas in postglazialer Zeit', *Z. d. Deutsch. Geol. Ges.*, bd. 62, s. 143-62.

⁸ e.g. E. Wahle, *Ostdeutschland in jungneolithischer Zeit, ein prähistorisch-geographischer Versuch*. Mannus Bibl. no. 15. Würzburg, 1918, s. 98.

⁹ H. Reinerth, *Die jüngere Steinzeit der Schweiz*. Augsburg, 1926, s. 16-29.

it may be noted that Danish and Swedish workers have generally equated the transition from Atlantic to Sub-boreal with that from the Dolmen to Passage-grave stage of the northern Neolithic. This equation, if valid, would of course leave the main Neolithic colonization of Europe comfortably within the moist, equable, Atlantic phase. As is well known, this is confirmed for our British branch of the Neolithic 'Western' culture by the evidence of snail shells from the causewayed camps and the long barrows.

The real test of the relevance of the Blytt-Sernander hypothesis came with the growth of comprehensive and exact knowledge of the development of vegetation during post-glacial times, first made possible by pollen-analysis, a technique not fully demonstrated until 1916. When the palaeo-botanists at length, after tedious research, succeeded in working out the sequence of forest development in different parts of Europe, they found no evidence of any pronounced fluctuation during Neolithic and Bronze Age times. On the contrary, the work of pollen-analysts has dealt a mortal blow to the *Steppenheide* theory. Here I may cite the work carried out by Karl Bertsch (10) in Swabia, that very region which provided Gradmann with his botanical 'evidence'. The crucial fact established by pollen-analysis is that during the time, when according to the Blytt-Sernander theory a continental type of climate should have prevailed, both the silver fir and the beech achieved their widest spread. Yet each of these trees was damp-loving, and the beech, in particular, was in that region intolerant of a continental type of climate; indeed, the palaeobotanists tell us that one reason for the lateness of their spread was precisely the remoteness of the areas to which they had withdrawn to escape the severely continental conditions of the last Ice Age. As P. Keller (11) pointed out, about the same time, in discussing the forest history of Switzerland, the mere fact that the beech achieved its widest distribution during the Neolithic and Bronze Age periods shows that there cannot have been any contemporary climatic fluctuation sufficient to cause the thinning or disappearance of existing forests. Indeed, according to H. Nietsch (12), there is evidence that the beech spread into regions which today have a rainfall below the minimum needed for this tree to flourish, suggesting that at the time of its maximum spread conditions must have been more and not less favourable to forest-growth than to-day.

The researches of botanists have fully confirmed the former existence of a steppe flora in the existing temperate zone of Europe (13), but this vegetation, which flourished only until overtaken by the forests advancing into the zone vacated by the ice-sheets already in the Pre-boreal period, had nothing to do with the Neolithic settlers. On the contrary, the earliest farming communities did not penetrate Europe until the re-colonization by forest trees was far advanced, although, as we have seen, still in full swing. From the time of the Neolithic settlement, there is, it is true, evidence for a recrudescence of grasses and for the appearance of a number of plants other than forest trees, but all the indications point to farming as itself the cause for this. One may begin by referring

¹⁰ K. Bertsch, 'Klima, Pflanzendecke und Besiedlung Mitteleuropas in vor und frühgeschichtlicher Zeit nach den Ergebnissen der pollenanalytischen Forschung', *Rom. Germ. Komm.*, 18 Ber., 1928. Frankfurt a.M.

¹¹ P. Keller, 'Pollenanalytische Untersuchungen am Schweizer Mooren und ihre florenge-schichtliche Deutung', *Veroff. des Geobot. Inst. Rubel in Zurich*, 1928.

¹² H. Nietsch, *Wald und Siedlung im Vorgeschichtliche Mitteleuropa*. Mannus Bibl. no. 64. 1939, see s. 48-51.

¹³ e.g. R. Schüttrumpf, 'Die paläobotanisch-pollenanalytische Untersuchung' in A. Rust, *Das Altsteinzeitliche Rentierjägerlager Meiendorf*. Neumünster, 1937, s. 11-47.

to the pioneer researches of the Danish botanist, J. Iversen (14), who found evidence of an abrupt decline in the pollen of forest trees and a corresponding rise in that of other vegetation at levels in bogs contemporary with the Neolithic settlement. In the bog of Ordrup this same level was marked by an extensive charcoal layer, suggesting that the decline in forest trees was the direct result of burning. That this burning was brought about by deliberate action on the part of the Neolithic farmers is indicated by the appearance around the same level of the pollen of plants introduced by man or which followed in his footsteps, notably cultivated cereals and meadow weeds such as the plantain, the 'white man's trail' of the North American Indians. A similar marked change at the Neolithic level has recently been demonstrated by Dr H. Godwin (15) for Hockham Mere in the northern Breckland. In this Godwin sees the beginning of the process whereby the region changed from a closed mixed oak forest to the open heath we know to-day. Although unable, as yet, to advance direct evidence of the mechanism of this change, Godwin favours Iversen's suggestion that it was wrought by forest clearance on the part of Neolithic man. Thus, so far from the Neolithic settlement being made possible by a decline in the vigour of forests due to climatic causes, it was this settlement itself which initiated the process of forest destruction at the hands of man.

As to the all-pervading character of the woodlands at the peak of the forest period, the eminent British ecologist A. G. Tansley expressed himself in no uncertain terms in 1911 (16):

'There is no doubt that by far the greater part of the British Isles were originally covered by forest: in England the whole of the east, south and midlands, except perhaps some of the chalk downs and some of the poorer sands, and of the north and west probably everything but the summits of the higher hills; in Wales the alluvial plains of the larger rivers and the valley sides up to similar altitudes; in Scotland the great central lowland plain, the flat shores of the northern firths on the east coast, and the sides of the valleys running into the heart of the Highlands; in Ireland presumably the central plain and the hill country up to a considerable altitude'.

Tansley's inferences, which were derived in the main from his studies of existing plant associations in relation to soil-types, have been comprehensively confirmed by later intensive work on the history of vegetation by means of pollen-analysis and other methods. There is now a broad measure of agreement that forests once covered nearly the whole of western Europe below the tree-line, apart from the sea-shore, excessively poor sandy areas, beaver-meadows, salt-springs and the like. If some would still maintain reserve on the antiquity and origin of certain open pasturages, it is notable that in his magnificent new book Tansley wrote (17):

'It is hard to believe that the chalk and oolite uplands were not covered with forest in the warm damp climate of Atlantic times, since this was essentially a forest climate in which deciduous forest attained its maximum extension in this country

¹⁴ J. Iversen, 'Land occupation in Denmark's Stone Age', *Dan. Geol. Unders.* II R. Nr. 66. Copenhagen, 1941. Note, also, comments by Dr H. Godwin in *Nature*, vol. 153, p. 511. Some implications of Iversen's work were suggested by the present writer in a lecture at the London Univ. Inst. of Archaeology's Conference in the summer of 1944.

¹⁵ H. Godwin, 'Age and origin of the "Breckland" heaths of East Anglia', *Nature*, vol. 154, p. 6.

¹⁶ *Types of British Vegetation*, ed. by A. G. Tansley. Cambridge, 1911, pp. 65-66.

¹⁷ A. G. Tansley, *The British Isles and their vegetation*. Cambridge, 1939, p. 164.

and in western Europe generally. Oak will not, it is true, form good trees on the shallow chalk and limestone soils, but yew, ash and beech will and do'.

As we have seen in the case of the Breckland, pollen-analysis of mere sediments has shewn that even this unpromising region supported dense oak forest at the time of Neolithic man's appearance. Broadly speaking we may conclude that regions capable of yielding crops were forested when the first farmers appeared upon the scene.

The implications of this will become clearer as we consider examples of Neolithic settlement. One may begin with the Danubian peasants, who, as is well known, settled almost exclusively on the loess, spreading from one patch to another as they extended their area of colonization. Now, we have it on the authority of the botanist Tüxen (18) that the loess of the Middle Rhenish area, settled by the Danubians with special intensity, carried an oak-mixed forest with hazel undergrowth. Moreover, it has been pointed out by Nietsch (19), that the only soils in this area too poor to support forest, namely the sands of the Rhine-Main triangle, were either ignored or at best very sparsely settled by the several groups of Neolithic colonizers penetrating this part of Germany. The inference is unavoidable that the neolithic farmers were more concerned with the ease of working and fertility of the soil than with its forest cover. A point to be noted is that, although a fertile soil might support a dense vegetation, this would be offset to some extent by the comparatively small area which it would be necessary to clear, but the crucial fact is that the Danubians colonized soil which competent authority pronounces to have been forested. The only conclusion to be drawn is that the Danubians were not only fully capable of clearing, but did in fact clear the ground of forest.

Even more instructive is the Neolithic settlement of Denmark and North Germany, since here we can observe two separate cultures in close proximity, each apparently adapted to distinctive soil-types with different forest coverings. The primary zone of the northern megalithic colonization lies within the limits of the last major glaciation (Weichsel-Würm) and predominantly within the Baltic end-moraine, whether in east Jutland, Schleswig-Holstein, northern Brandenburg, Mecklenburg or Pomerania. The secondary spread of the culture, on the other hand, over northwest Germany and north Holland, extended onto the ground moraines of the older (Elster-Saale) glaciation, soils subject to more prolonged weathering (20). Evidently it was the fertile soils of the ground moraines which were chiefly sought by the northern megalithic folk, preference being given in the first instance to the younger and less weathered soils. Yet it is important to note that fertility was not the only criterion which determined the choice of ground. As Prof. G. Schwantes (21) has emphasized in the case of Schleswig-Holstein, the megalithic sites are found on the poorer, sandier, rather than on the richer, loamier soils of the glacial drift: in other words, as Fox (22), has shown so clearly for southern England, the early farmers sacrificed fertility in some measure to ease of working; it was of no use to clear the heavy clay lands, however rich the potential yield, if the equipment for cultivating them was lacking. As for the forest covering of the ground moraines cultivated by the northern megalithic folk, Schwantes cites the botanist

¹⁸ R. Tüxen, 'Die Grundlagen der Urlandschaftsforschung. Ein Beitrag zur Erforschung der Geschichte, der anthropogenen Beeinflussung der Vegetation Mitteleuropas', *Nachr. aus Niedersachsens Urgeschichte*, 1931, s. 59-105. See s. 77 and s. 88-9.

¹⁹ H. Nietsch, op. cit. s. 180-1.

²⁰ H. Nietsch, op. cit. s. 155-67.

²¹ G. Schwantes, *Geschichte Schleswig-Holsteins. Bd. I. Vorgeschichte*. Lief., 1-7. Neumünster, 1939, s. 462 ff.

²² Sir Cyril Fox, *The Personality of Britain*, 1st ed., p. 79.

W. Christiansen for the view that this was most probably dry oak-mixed-forest, as opposed to the damp oak-hornbeam association of the heavier soils. Yet this should not make us overlook the fact that over the whole area of their distribution from the North Sea to the margin of the Russian steppes the northern megalithic peoples chose for settlement territories, which at the time were covered by the oak-mixed-forest. Of these people Nietsch wrote in lyrical mood (23).

'Where the oak trees grow best, there find they the best fields, there their cattle prosper, and they themselves bide as energetic and doughty peasants of the woodland'

By contrast, the single-grave or battle-axe people of central Jutland and Schleswig-Holstein occupied poor glacial outwash sands, carrying an oak-birch association of a type which under the influence of burning and of grazing animals would rapidly degenerate into heath. An interesting point made by Schwantes (24) in this connexion is, that whereas the oak-mixed forest provided the best sustenance for cattle and swine, the oak-birch association was more suited to sheep. Perhaps it was in consequence of a more pronouncedly pastoral mode of life that, in contrast with the megalithic people, whose houses and settlements have been found quite commonly, the settlements of the single-grave people have proved elusive.

As to Britain, although doubts remain as to the vegetation natural to parts of the chalk, the distribution of Neolithic sites as a whole makes it certain that here also forest clearance must have been carried out at that time. It must be admitted that in lowland Britain many of the sites relating to Neolithic people of 'western' origin have so far been found on stretches of chalk, which it may still be argued, may in parts have been free of forest trees at the time of the Neolithic colonization. There is, however, by no manner of means an exclusive correlation between the 'western' people and the chalk: even in southern England this is very far from true, as witness, among many others, the finds of Neolithic 'A' pottery from the Fens (25), from the submerged land-surface of the Essex coast (26), from the site of the Abingdon 'camp' on the Thames gravel (27) and from Great Ponton, Lincs. (28). As to the settlement areas of the Neolithic communities, who from their homes in the forests of northern Europe reached us from across the North Sea, these comprised first and foremost soils favoured by the dry oak mixed forest; only secondarily did these Neolithic 'B' people spill over into chalk areas settled by the 'westerners', with whom in some regions they intermingled.

Much can be learned from the placing of our megalithic tombs and long barrows. A point, on which Fox (29) once commented as a 'curious fact', is that

'many of the chambered cairns and long barrows of the Neolithic Age are inconspicuously placed in hollows, or on slopes, instead of in the position we regard as more normal—on ridges and shoulders of the hills. If the hills were originally forest-clad, this inconsistency is what might have been expected since in forest one cannot judge where the dominant positions are'

²³ Freely translated from the original (Nietsch, op. cit. s. 167): 'Wo die Eichen am besten wachsen, finden sie den besten Acker, gedeiht ihnen das Vieh, und sie selber bleiben tatkräftige wehrhafte Waldbauern'

²⁴ G. Schwantes, op. cit. s. 461.

²⁵ e.g. *Ant. J.* xv, pp. 302-3.

²⁶ *Proc. Prehist. Soc.*, 1936, p. 188.

²⁷ *Ant. J.* vii, 1927, pp. 438-64; viii, 1928, pp. 461-77.

²⁸ *Ant. J.* xv, 1935, pp. 347-8.

²⁹ Op. cit. 1st edn., pp. 48-9. Absent from the current (4th) edn.

By contrast, the round barrows of the Bronze Age and later periods are commonly sited with accuracy so as to break the sky-line, having presumably been erected at a time when the cleared area was already extensive (30). Again, many megaliths and long barrows are visibly placed on soils well suited to the growth of trees. It is a striking fact that about one in six of the long barrows visited by Crawford, when collecting material for his book, were situated in spinneys, plantations or woods, most commonly of beech trees (31). Excavation of some of the Cotswold cairns has shown them to be overlying a seam of red clay, which according to geological opinion is the product of natural weathering of the limestone and which can with confidence be assumed to have carried forest. At Nympsfield a beechwood with ash and larch grows on the same clay only a short distance from the cairn, the mollusca from which have significantly been interpreted by Kennard as indicating 'a rather damp scrub woodland, for typical grassland forms are absent (32)'.

Very suggestive evidence comes from Wales. As Grimes recognized from his field surveys, many of the Welsh monuments were erected on sites, which according to all the rules one would expect to have been forested in early times. In 1936 he drew attention to the placing of megalithic tombs on valley flanks or spurs, or even on valley bottoms in Carmarthenshire (33). Again, in 1939, he emphasized that those of the Black Mountains of Brecknockshire were normally situated on the lower slopes below the existing tree-line (34). Although Grimes had no occasion to refer to it at the time, Hemp had in fact already published evidence pointing strongly in the same direction. Of the situation of the tomb of Bryn yr Hen Bobl, Hemp wrote in 1935 (35), that:

'... the wide view of the Caernarvonshire mountains, which it once commanded, is now partly hidden by the trees which cover the steep fall of the terrace down to the water... There is no sign that any of the ground in the immediate neighbourhood has ever been under cultivation, and it still carries many ancient trees; two of them, oaks whose age must be measured by centuries, grow on the summit of the cairn itself'.

Whether in his allusion to the 'wide view' Hemp was referring to a hypothetical 'open' countryside in neolithic times, or whether to the clearings made in the primeval forest,

³⁰ Mr H. A. Hyde, Keeper of Botany at the National Museum of Wales, has recently published evidence on this point from the Middle Bronze Age Pond Cairn, Glam. (*Archaeologia* 87, p. 175-6). He states that, while it would be unsafe to reconstruct a picture of local vegetation from the samples examined, yet 'the use as fire-wood of so much gorse, bracken, hawthorn and hazel, in comparison with oak and ash, probably indicates that locally at least the forest had already been destroyed and replaced by grassland and scrub; indeed on the botanical side no such direct evidence for early deforestation seems previously to have been published'.

³¹ O. G. S. Crawford, *The Long Barrows of the Cotswolds*, Gloucester, 1925. *Passim*, e.g. nos. 2, 3, 13, 19, 23, 27, 41, 42, 44, 52, 57, 61, 66, 68. In addition one may note that the Giant's Cave, Luckington, bush-grown when visited by Crawford, was covered by 'some oaks and other trees and bosage' in Aubrey's day; also what appears to have been a chambered tomb, described by George Clinch as deep in a thick wood at St. Margaret's, in the Black Mountains of Herefordshire, *ibid.* nos. 78 and 61 respectively, was not to be found at the time of Crawford's visit.

If the reader refers to the photographs of Danish and north German chambered tombs reproduced by Brøndsted (*Danmarks Oldtid*, I, figs. 112, 113, 144, 146, 148) Sprockhoff (*Die nordische Megalithkultur*. Berlin, 1938. Taf. 1, 3, 4, 5, 6, 7, etc.) and Schwantes (*op. cit.* taf. 14, abb. 209, 210), he will find ample evidence for the occurrence of such monuments under trees.

³² *Proc. Prehist. Soc.*, 1938, p. 212.

³⁴ *Proc. Prehist. Soc.*, 1939, pp. 120-1.

³³ *Proc. Prehist. Soc.*, 1936, p. 114.

³⁵ *Archaeologia*, vol. 85, 1935, p. 253.

is not clear from the context, but the analysis of charcoals obtained from the site and identified by Mr Hyde makes it probable that the surroundings of the cairn would under natural conditions have been of the 'damp' oakwood type. Hyde commented (36) :

'If it be assumed that the specimens constituted a fair sample of the tree flora of the period in the immediate neighbourhood of the site, then it may be concluded that the predominant vegetation was oakwood. In view of the fact that the predominant subsoil is boulder clay, it seems probable that the woods were of the 'damp' oakwood type, with Common Oak (*Quercus Robur L. sens. str.*) dominant: the high proportion of hazel is consistent with this supposition. The high percentage of hawthorn probably indicates abundant scrub growth . . .'

The significance of Bryn yr Hen Bobl is all the greater that the terrace on which it is found, only $3\frac{1}{2}$ miles long and $1\frac{1}{2}$ miles broad, bordering the shores of the Menai Straits 100 ft. above high water, originally carried at least 17 megalithic tombs.

That some at least of our megaliths were erected on ground which naturally bore forest—and 'damp' oak forest at that—would seem to be pretty firmly established. Whether, as Grimes suggests (37), the cairns were built on land cleared for farming, is more doubtful. The possibility should be considered that the tombs were set up in clearings made for the purpose in the virgin forest. In view of the sanctity of forests among many ancient peoples, this cannot lightly be brushed aside. Nearly a century ago, M. Maury, à propos of this very point, cited the case of a 'dolmen' known as the 'Calvaire de la Motte', situated in the ancient forest of Duault, and added that 'en Allemagne, c'est souvent dans la profondeur des forêts, à l'ombre des bocages, sous de hautes futaies que l'on découvre ces antiques tombeaux connus sous le nom de Hunengraeber . . . (38)'. Whether certain of the megalithic tombs of Cotswold and Wales were built on fresh clearings or on older established ones is, yet, subsidiary to the main point that their construction presupposes that Neolithic man was able to clear forest, in some instances of the 'damp' oakwood type.

The distribution of archaeological sites and finds in relation to soils regarded by ecologists as naturally forest-bearing, shows, if we reject, as we have done, the thesis of a catastrophic natural declension of the post-glacial forests, that Neolithic man must have been fully capable of clearing the forest for himself. This brings us into direct conflict with the second main prop of Gradmann's theory, the idea that the primeval forest was unbelievably hostile to human settlement. At its crudest, the conception of the *Siedlungsfeindlichkeit* of the forest was expressed by Hoops in the succinct phrase '*Der Urwald ist der Feind und nicht der Freund des Menschen* (39)'. In point of fact, as recent German authorities have themselves admitted (40), such a negative point of view has contributed in no small fashion to obscure our understanding of the interrelations of men and forests. So far from forests being actively antagonistic to man, the boot was if anything on the other foot: in Maury's words 'l'humanité ne se développe qu'au détriment de la végétation arborescente . . . (41)'. In the face of an advance in culture so striking as that implied in the adoption of farming, we are surely entitled to expect a marked inroad on forests. In order to practise the new economy in Europe, Neolithic man had no choice but to encroach upon the forest, not only directly to cultivate

³⁶ *ibid.* p. 281.

³⁷ *Proc. Prehist. Soc.*, 1936, p. 114.

³⁸ L. F. A. Maury, *Histoire des grandes forêts de la Gaule et de l'ancienne France*. Paris, 1850. pp. 163-4.

³⁹ J. Hoops, *op. cit.* p. 9.

⁴⁰ e.g. G. Schwantes, *op. cit.* s. 458; H. Nietsch, *op. cit.* s. 159.

⁴¹ L. F. A. Maury, *op. cit.* p. 320.

the soil, but even more pervasively through his domestic stock. In addition it should be remembered that the rapid growth in the density of population made possible by the new economy greatly increased the call made upon forests as sources of raw materials needed for a wide range of activities.

Man had, indeed, already established harmonious relations with the forest in Mesolithic times. It is only natural that Hoops (42) should have rejected the view, justified by modern research, that the primeval forest gave shelter to communities of food-gatherers and hunters. The supposed 'hiatus' in the human settlement of Europe between the end of the Ice Age and the spread of farming was seized upon as convincing evidence of the incorrigible hostility of the forests, which, spreading into Europe, expelled the hunting tribes adapted to tundra and steppe and maintained an impenetrable front until thinned by natural processes during the Sub-boreal phase of aridity. As a matter of fact, when Hoops wrote, discoveries at Mullerup, Mas d'Azil, and Fère-en-Tardenois had already shown that the 'hiatus' was itself an illusion. To-day we know that, although certain Mesolithic groups shunned the forest, keeping to such areas as the poorest sands, uplands above the tree-line and the sea-shore, others on the plain of northern Europe had already adapted themselves to forest conditions (43). The Maglemosians, not only used a wide range of forest products, but worked wood on a substantial scale. For felling and working timber they had axes and adzes of flint and stone, the latter even ground on occasion and rubbed smooth (44), prototypes of the ubiquitous Neolithic celt. Yet, although he may have opened up small areas round his dwelling and obtained trunks for his dug-out boats (45), Mesolithic man had no motive for clearing the forest on any extensive scale. Thus, before the introduction of farming, early man made no serious inroad on the forest. On the other hand, he was far from shunning it completely. Certain Mesolithic groups made themselves at home in the woods, got to know their riches and initiated that exploitation by gathering, based on intimate knowledge of natural yields, which was to play a part of no mean importance to the successive peasant communities of Europe down to medieval and even later times. The suggestion that forest clearance may have begun on a restricted scale prior to the spread of farming is confirmed by the evidence of the Finnish dwelling-places, inhabited by communities basically mesolithic in their mode of life, although contemporary with the megalithic and battle-axe cultures of the southern Baltic. Many of the old sites were overgrown by forest subsequent to their abandonment in the Stone Age and revealed only by modern clearance (45^a).

Since, as we have seen, the most desirable soils supported forest at the time, it was necessary for the earliest farmers to clear the ground before they could begin to cultivate it. If this has proved a hard doctrine for some prehistorians, it is because they envisage clearance of a far more drastic and definite character than in fact took place. M. Grenier's (46) challenging claim

⁴² J. Hoops, op. cit. s. 91 ff.

⁴³ V. G. Childe, 'The Forest Cultures of Northern Europe: a Study in Evolution and Diffusion', *J. R. A. I.* LXI, 1931, pp. 325-48; also J. G. D. Clark, *The Mesolithic Settlement of Northern Europe*. Cambridge, 1936. ⁴⁴ J. G. D. Clark, op. cit. p. 105.

⁴⁵ For Mesolithic dug-out canoes and paddle-rudders, *ibid.* pp. 107-9.

^{45a} J. Ailio, *Die steinzeitlichen Wohnplatzfunde in Finland*. Helsingfors, 1909. Bd. 1, s. 2; bd. II, s. 150.

⁴⁶ A. Grenier, 'Aux origines de l'économie rurale', *Annales d'histoire économique et sociale*, t. 2e, 1930, p. 28.

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'la véritable histoire de l'âge neolithique, c'est, avec la domestication des animaux et l'invention de l'agriculture, la conquête de la terre sur la forêt'

is valuable for drawing attention to a neglected aspect of Neolithic activity, but gives a false impression of thoroughness and permanence. What in reality we have to envisage, is the temporary clearance of restricted areas carried out in successive stretches of forest, many of which re-established themselves as the farmers and their stock moved elsewhere. The Neolithic farmers were small in numbers, and since they practised an extensive mode of agriculture, seldom tilling any given patch of soil for more than a few years and frequently breaking up new ground, they must have occupied at any particular moment a much smaller area than the total distribution of relevant archaeological finds might suggest. Again, it is likely, although we need more precision on this point, that tillage played a smaller part than stock-raising in the economy of the Neolithic communities of Europe. Indeed, could we but have flown over Neolithic Europe, it is possible that we might have failed to observe that patches of the endless forest were in fact being utilized by small, scattered communities of farmers.

An essential element in the system of extensive, temporary cultivation, such as obtained in Neolithic Europe, was the clearance of forest by fire. The potash contained in the ash, which resulted from the burning of timber and shrubs, greatly increased the return from the cleared area. We have it on the authority of Manninen (47) that among the Finno-Ugrian peoples ground cultivated according to the principles of *Brandwirtschaft* yielded from fifty- to ninety-fold of rye, as compared with a bare fifteen- to twenty-fold from ordinary ploughland in the same area. This rich potash dressing was only one of the bounties which accrued to those who cultivated clearings in the forest. Carl Schott (48) tells us that the early colonists of southern Ontario had only to scratch the newly cleared ground with rake or harrow in readiness for the seed and that not until five or six years did they as a rule need to use the plough. Similarly, according to Manninen (49), it was usual among the Finno-Ugrians merely to harrow in the seed among the ashes of the burnt forest. By contrast the task of breaking up the mythical 'open' grassland, the treeless corridor of *Steppenheide* imagined by Gradmann, might well appear beyond the capacity of the Neolithic farmer, who, be it remembered (50), had to make do without a plough!

It has sometimes been doubted whether the foliaceous trees, with which Neolithic man was mainly confronted in Europe, would have been as amenable to burning as the coniferous forests with their carpets of inflammable needles and pine-cones, such as are met with in Finland, where the practice of forest burning survives. While it is possible that more intensive preparation may on occasion have been called for, there is no doubt that foliaceous trees were burnt during the colonizing days in southern Ontario, during historical times in France (51), and, what is more to the point, in Neolithic Europe. The only instance from prehistory certainly established is that from the Ordrup bog in Denmark described by Iversen and already mentioned (p. 61), but it is worth recalling what may have been indications of similar intentional burning from the area north of the

⁴⁷ I. Manninen, *Die Finnisch-Ugrischen Völker*. Leipzig, 1932, s. 274-5.

⁴⁸ C. Schott, op. cit. s. 98-99.

⁴⁹ I. Manninen, op. cit. s. 30.

⁵⁰ We reject alike the antiquity of the notorious Walle plough and validity of the Bodman 'reconstruction'.

⁵¹ Marc Bloch, *Les Caractères originaux de l'histoire rurale française*. Oslo, 1931, pp. 27-9.

Swiss lake-settlement of Robenhausen, which at the time were interpreted as debris blown from the settlement when burning in a strong south wind (52).

Important though burning must have been as a method of forest clearance, it was by no means the only one available. As in Ontario and modern Finland, the axe must have played an essential part in clearing the forests of neolithic Europe. There is ample archaeological evidence of Neolithic man's capability with the axe. He used timber lavishly in building his houses (53) and tombs (54) and for his dug-out canoes (55), inherited, as we have seen, from forest-dwelling groups of the Mesolithic age. Nor should the numerous experiments made to test the efficacy of Neolithic flint and stone axes be left out of account. Sir John Evans quoted the case of a Mr Sehested's wooden hut, the trees for which 'were cut down and trimmed with stone hatchets ground at the edge (56)', and recalled experiments by the Vicomte Lepic showing how 'with a polished Danish flint hatchet 8 inches in diameter, hafted in part of the root of an oak, an oak-tree 8 inches in diameter was cut down without injury to the blade (57)'. More recently Prof. Jacob-Friesen has demonstrated that a fir-tree 17 cm. in diameter can be felled in seven minutes using an axehead of chipped flint, and in five with one of polished stone (58). This last experiment is particularly interesting, indicating, as it appears to do, that a polished is empirically superior to a chipped axe for felling trees: such a difference, if not induced by other factors, such as the shape or weight of the axes or differences in their materials, would be sufficient to account for the added labour involved in polishing chipped ones. The circumstances under which polished axes are found is sometimes suggestive. Thus, four stone axes, two of them showing signs of heavy use, together with a stone axe hone, were found on the site of Bryn yr Hen Bobl; in no case were they associated with any of the burials and the only reasonable explanation for them is that they were used in the original clearance. Again, there is such a case as that cited by M. Grenier (59), in which numerous broken polished axes were found in the course of modern deforestation within a radius of two kilometers of the spring of Bonnefontaine near the right bank of the Saar in Lorraine, evidently indicating an ancient clearance over which the forest had successfully re-established itself. It may be accepted that the axe of flint or stone was fully capable of felling trees and that in fact it played a vital part in deforestation. Indeed, it is only in the light of this that we can explain the abundance and ubiquity of the implement and the high regard paid to it by Neolithic man, as witness the elaborate flint-mines and the intricate trade by which he sought to ensure a supply of the best material available. No doubt the flint-mines at Grimes Graves were worked primarily to provide the axes needed in clearing the mixed oak forests of the Breckland!

⁵² F. Keller, *The Lake Dwellings of Switzerland*. Trs. London, 1866, p. 47.

⁵³ e.g. R. R. Schmidt, *Jungsteinzeit-Siedlungen im Federseemoor*. I. Lief. Augsburg, 1930, s. 64, 66, 67, etc.

⁵⁴ e.g. Giants' Hills, Lincs. C. W. Phillips, *Arch.* LXXXV, pp. 47-8, 49, 59.

⁵⁵ It is possible that the flint and stone axes found respectively in the Erith and Clyde dug-out canoes may have been used to hollow them out or possibly to fell the parent tree. See *Ant.* 7, VI, p. 127.

⁵⁶ Sir John Evans, *The Ancient Stone Implements . . . of Great Britain*. 2nd edn. London, 1897, p. 69.

⁵⁷ *ibid.* p. 162.

⁵⁸ Quoted from H. Nietsch, *op. cit.* s. 70.

⁵⁹ A. Grenier, *op. cit.* p. 29.

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It has sometimes been implied (60) that an obligation to remove the stumps of felled trees was among those which deterred prehistoric man from colonizing forest country, but in fact our Neolithic farmers need never have shifted a single one, at least until they were far in decay. We have not to go back very far in time to find that in some forest regions tree stumps were suffered to rot in the ground, even where the plough was habitually employed. F. Mager (61) has shown from his researches on the economic history of the Duchy of Schleswig and again on that of old Prussia that the usual practice of the peasants in these regions during the 17th, 18th and early 19th centuries was to cultivate the soil between the stumps until they finally disappeared, growth in the meantime being kept in check by browsing animals. Rather similar practices have been described by Manninen for the Wotjaks of the Volga-Kama region, whose agriculture was based on the burning and felling of successive areas of forest (62). The Finns, likewise, cultivated between the pine-stumps of their clearings (63), as we are reminded by a passage in the Kalevala epic, wherein the voice of the aged Väinämöinen is likened to 'the hoe among the pine-roots' (64). There is further confirmation from the European settlement of southern Ontario during the period after 1783, described by Schott (65), according to whom the colonists simply left the stumps in the ground until they could be dragged out without trouble; it is interesting to note that whereas the stumps of foliaceous trees rotted sufficiently to be easily removed after eight or ten years, those of conifers were far more tenacious and often showed no signs of decay after fifty years. A striking fact recorded by Schott is that in the year 1880 some 46 per cent of the fields of York County, first colonized by white men in 1790, showed tree stumps, even though by this time Ontario had become one of the main granaries of Europe.

There remains one agent of deforestation, of which the predominating importance has been admitted by ecologists and economic historians alike, namely the domesticated animals of the early farmers. Until the various fodder crops, such as sown grasses, clover and the various members of the genus *Brassica*—e.g. swedes, turnips, cabbages, and kale—were established as field crops, not as a rule before the 18th century, the feeding of stock during the winter months remained a leading problem of European husbandry (66). Full use was made of hay from natural grassland, straw from grain crops and stubble, but to a great extent it was upon the forests that farmers had to depend to bring even a minimum of livestock through the winter. As Parain (67) wrote of French medieval economy, the forests

⁶⁰ e.g. by Fox, op. cit. 1st edn., p. 71; 4th edn., p. 79.

⁶¹ F. Mager, *Entwicklungsgeschichte der Kulturlandschaft des Herzogtums Schleswig in historischer Zeit*. Breslau, 1930; also 'Die Rodungsfrage in Altpreußen', *Jährber. d. Universitätsbundes*. Königsberg, 1934, quoted by Schwantes, op. cit. s. 462-3 and Schott, op. cit. s. 86 f.

⁶² I. Manninen, op. cit. s. 245.

⁶³ G. Retzius, *Finnland. Schilderungen aus seiner Natur, seiner alten Kultur und seinem heutigen Volksleben*. Berlin, 1885, s. 42-5.

⁶⁴ Runo XXI, 350. Everyman edn. vol. I, p. 248.

⁶⁵ C. Schott, op. cit. 96-9.

⁶⁶ C. S. Orwin, *The Open Fields*, pp. 52-6. Oxford, 1938.

⁶⁷ C. Parain, 'The evolution of agricultural technique', *The Cambridge Economic History of Europe*, I, pp. 118-68, p. 162. Cambridge, 1941.

'were the peasants' providence. They fed his horses . . . , his cattle, his sheep, his goats, with their leaves—eaten green in summer and gathered dry in winter—and the grass of their open glades. His pigs ate the acorns and beech-mast . . . the forest provided a part, but often a great part, of the feed of every kind of domestic animal'.

Pig-sties were often built in the woods and there, according to Lord Ernle (68), 'during most months of the year' the swine ranged in quest of 'roots, wild pears, wild plums, crab apples, sloes, haws, beech-mast and acorns'. The familiar fact that woods were commonly assessed in Anglo-Saxon charters and in the Domesday Survey as providing 'pannage' for so many swine is only one indication of their economic significance (69). Forests were equally vital for sustaining cattle and sheep, which grazed on leaves, herbage and shoots and during the winter months were fed with almost everything but the solid wood of the trunks. Characteristic is Fitzherbert's (1523) advice to farmers to lop and top their trees in winter 'that they beastes maye eate the brouse, and the mosse of the bowes, and also the yues (ivies) (70)'. The lopping of trees for fodder is even now met with among some of the more backward European peasant communities.

If such conditions obtained in medieval times, when bread had already become established as the staff of life, they must have applied with even more force to times when stock-raising played a proportionately greater part. The forest must have been even more integral to prehistoric than to medieval farming: it was as vital to the pastoral as to the agricultural side of husbandary. In reality it is impossible to isolate the effects on the forest of the two leading aspects of mixed farming: browsing beasts, by thinning undergrowth and scrubs, around the tilled areas, must have helped prepare the way for clearance when it became necessary to shift cultivation to fresh zones of forest; and it was on his stock also that the Neolithic farmer must have relied to keep down unwanted growth on his very imperfectly cleared plots. The same factor must be taken into account when considering the fate of areas which reverted to waste in the normal course of extensive agriculture. At first, no doubt, the forest succeeded in re-establishing itself on all but the poorest soils, as, according to Iversen, occurred in the Ordrup bog. Yet, as settlement grew more dense and the effects of grazing became more concentrated, there is little doubt that by eating off the seedlings in the way described by Tansley (71), domestic animals must have prevented the rejuvenation of woodlands and on an ever wider scale brought about their extinction. It is obvious that in the course of prehistoric times grazing animals must have come to exercise an immense effect on the nature of the countryside.

In conclusion, a word must be said about the limitations on prehistoric settlement imposed by the heavier and less pervious clays, the effect of which has been to canalize early settlement within fairly narrow limits and impose a certain uniformity of pattern

⁶⁸ Lord Ernle (R. E. Prothero), *English Farming Past and Present*, 5th ed. (Ed. Sir A. D. Hall), pp. 16-7. London, 1936.

⁶⁹ e.g. H. C. Darby, 'Domesday woodland in East Anglia', *ANTIQUITY*, 1934, pp. 211-15, and F. W. Morgan, 'Domesday woodland in Southwest England', *ANTIQUITY*, 1936, pp. 306-24.

⁷⁰ Quoted from C. S. Orwin, op. cit.

⁷¹ A. G. Tansley, op. cit. p. 66. Tansley quotes A. C. Forbes (*The Development of British Forestry*, London, 1910, p. 7) for the view that one cause of the British Isles and the seaboard of western Europe being among the most poorly wooded parts of Europe may be that the mild winters of Atlantic regions allow grazing all the year round.

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on successive stages in the colonization of many regions (72). This was not lost upon upholders of the *Steppenheidetheorie*. Gradmann himself regarded the 'lack of any geographical progress in land-settlement from the Neolithic period through the Bronze Hallstatt and La Tène periods to the threshold of the Roman period (73)' as one of the outstanding facts of prehistory. Hoops (74) argued that, had the prehistoric colonization been due to forest clearance, it would surely have been extended as technical means improved, bronze replacing stone and flint, and iron bronze, and conversely that since this did not occur, at least on a commensurate scale, settlement must have been confined to naturally 'open' ground. In reality of course there was a marked development in the prehistoric colonization, only this took the form in the main of a more intensive settlement of the area already occupied (75). The barrier to expansion was not imposed to any serious extent by vegetation: the 'damp' oak-mixed forest might have been more difficult to burn than the 'dry', but an oak-tree remains an oak whether durmast or sessile, and in any case we know that Neolithic man cleared 'damp' oakwoods to build his megalithic tombs (see back pp. 64-5). The point is that until, at the very close of the prehistoric era, the farmer possessed a heavy wheeled plough, he was unable to tackle the heavier, less easily drained, soils. The contrast between the areas settled by prehistoric man and those shunned by him was not as between forested and 'open' lands, or even as between 'densely' and 'lightly' forested, so much as between those which he could and those which he could not cultivate.

⁷² This was one of the chief lessons from Fox's epoch-making study, *The Archaeology of the Cambridge Region*. Cambridge, 1923.

⁷³ R. Gradmann, *op. cit.* 1901, s. 374.

⁷⁴ J. Hoops, *op. cit.* s. 100.

⁷⁵ Intensive study of different areas has shown that, in fact, extensions of the area of settlement during prehistoric times did sometimes occur, e.g. in central and southern Germany. See H. Nietsch, *op. cit.* s. 209-10.

Floats and Buoyed Rafts in Military Operations

by JAMES HORNELL

A 'TIMES' war correspondent in a despatch dated 7th February 1945, has described how a regiment of Marshal Koniev's Russian army forced the crossing of the river Oder, upstream from Breslau, by loading their equipment upon 'doors, gates, tables, benches, greatcoats stuffed with straw and hay, rafts and reed rafts'. These they pushed before them over the ice and then propelled (swimming ?) across the swirling water still free of ice in the middle of the channel. Many of the men who plunged into the stream were swept downstream, but a sufficient number managed the crossing safely and succeeded in gaining and in maintaining footholds at two places on the further bank.

This account serves as a reminder that men of the immortal 'Ten Thousand', as well as troops led by Alexander in several of his campaigns, employed related expedients when faced with the necessity of crossing broad rivers in enemy territory or occupation, when boats were lacking or insufficient in number for the purpose.

These ancient expedients fall into three classes :—(A) the employment of watertight bags filled with hay, chaff or other light and buoyant material ; (B) swimming floats and rafts buoyed usually by inflated skins—rarely by earthen pots or by dried gourds ; and (C) wicker-framed craft of the coracle and curragh type.

The oldest of these seem to have been those of the first class, for instances of their use are the most numerous and the most important of those related by Greek and Roman historians.

The earliest of the classical records of the forcing of a river crossing is that described by Xenophon in his *Anabasis* (1, 5, 10). There he tells how the Greek mercenaries supporting Cyrus the Younger in his attempt to gain the Persian throne, had reached a point on the Euphrates opposite the large and flourishing city of Charmande—its site is near the modern Hit, notable for its bitumen wells. Provisions were on the verge of exhaustion, so the Greeks 'took the skins which they used as tent-coverings and filled them with light grass ; they then compressed and stitched them tightly together by the ends, so that the water might not touch the hay. On these they crossed and got provisions : wine made from the date-nut, and millet or panic-corn, the common staple of the country'.

Nearly three-quarters of a century later, Alexander the Great adopted a similar expedient to ferry his troops across the Danube in order to attack the wild Getae, massed in great numbers on the opposite bank. Few boats were available, so Alexander, doubtless calling to mind the method adopted by the Greek soldiers of Cyrus to cross the Euphrates, ordered 'the hides which served his troops as tent-covers to be filled with hay. On these, and in dugouts seized from the river-dwellers, Alexander succeeded in transporting 1500 cavalry and 4000 infantry across the river. Presumably the horses were made to swim over. (Arrian, 1, 3, 7).

The same primitive device was again utilized by Alexander during his pursuit of Bessus into Bactria (328 B.C.). On reaching the Oxus his progress was halted, for neither boats nor boat-building material were available—the assassin of Darius had



FIG. 1. A LARGE TIGRIS KELEK, BUOYED BY INFLATED SKINS, BEING UNLOADED AT BAGHDAD
Three quaffas (*coracles*) are working as lighters. (See p. 74)



FIG. 2. TWO INFLATED BULLOCK SKINS AND PADDLE, USED ON THE HEADWATERS OF THE RIVER JUMNA,
PUNJAB, INDIA, TO FORM A SMALL FERRY RAFT, WHEN TIED OR HELD TOGETHER BY THE FERRYMAN
(See p. 74)



FIG. 3. FUGITIVES FLEEING BEFORE ASSYRIAN ARCHERS, SWIM FOR REFUGE TO A FORTRESS
 From one of the Layard panels from the Nimrud palace of Ashur-nasir-pal III, now in the British Museum
 By kind permission of the Trustees. (See p. 75)



FIG. 4. FERRY CORACLES ON THE RIVER TUNGABHADRA, SOUTH INDIA, OF THE KIND WHICH WELLINGTON ORDERED TO BE PREPARED FOR THE CROSSING OF THIS RIVER IN 1803. (See p. 79)

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burned his boats after crossing. Again were the tent-covers of hide requisitioned ; on these, when stuffed with chaff (or hay) as dry as possible, with the margins tied tightly together 'so that the water might not penetrate into them', Alexander succeeded in ferrying his army across. It was tedious work ; the craft were crazy and unhandy, the river was in flood and about six stadia (some 1200 yards) wide, with a current running fiercely. Five days elapsed before the whole of the Greek army was transported over in this manner and enabled to resume the march on Samarkand (Arrian, III, 29, 8).

It is unlikely that these bales of dry grass were used singly ; to ensure stability and more rapid transport they would probably be combined into small groups, linked together into a temporary raft by means of ropes, tent-poles and the like. A raft of this kind would resemble closely the wool-stuffed raft support still in use on the upper waters of the Huang-ho in China.

The Abyssinian *jandi* is a modern survival of the prototype of these Greek military floats, which, however, are not likely to have been the invention of any Greek commander. Someone among them must have seen the device in use elsewhere, employed for peaceful transport as we see in Abyssinia to-day. In that country this curious 'craft' is still found indispensable by the Gallas of the Gojam Province in Southern Abyssinia, for transporting themselves and their goods across the Blue Nile or Abai. According to Rey (1927, 114), 'the jandi has to be dismantled and remade after each crossing'. His description enables us to understand how the Greek soldiers transformed their tents into serviceable ferryboats. He says :—'A large tanned ox-skin, with holes perforated all round the edges, is laid on the ground, dry grass is piled on it and the whole then lashed into a sort of package by means of hide ropes passed through the holes round the edge of the skin. If goods are to be transported, they are put inside ; if human beings, they squat *à la turque*, or let their legs dangle in the water ; in either case, swimmers pull and push the unwieldy craft, which rocks and rolls like a Channel steamer on a bad day'.

Although this exceedingly primitive means for crossing a river is now restricted to a single small area, it seems probable that it had wider distribution in ancient times, otherwise it is not likely that Xenophon would have countenanced its use, for he and the other commanders were extremely cautious about accepting any untried device—witness their rejection of the plan proposed by a Rhodian for the construction of a floating bridge across the Tigris when the Ten Thousand, after the defeat and death of Cyrus at Cunaxa (401 B.C.), found themselves stranded on the wrong (east) side of that river. The Rhodian's proposal was to use 2000 inflated skins of the many sheep, goats, oxen and asses to be had in the vicinity. These skins were to be tied together to form a bridge by girths taken from the sumpter horses, and anchored in the river by stones tied to the ends of ropes ; this done the skins were to be overlaid with fascines of branches with a covering of earth, over which the troops might pass, for, said the Rhodian, 'every bag will support two men and the fascines and earth will prevent them from slipping'. The scheme was considered ingenious but not practicable in the face of the powerful forces assembled on the opposite bank to oppose the crossing. Hence the plan was rejected and it was decided to abandon the original route of retreat and, instead, to march northwards, through Armenia, to the Black Sea.

The rejection of the plan put forward was wise in view of the failure of the Emperor Jovian's attempt to make use of an almost identical expedient to pass the harassed Roman army across the same river in A.D. 363. Jovian, who had been compelled to retreat after Julian's death in battle with the Persians, sought the advice of his engineer officers on the problem of effecting safe transit over the Tigris in the absence of the boats

destroyed by Julian for strategic reasons during his advance. The engineers, remembering the successful use of the device employed by Julian to pass the army over the broad and deep channels of the flooded Assyrian plain 'on bridges of floating rafts, which were supported by the help of bladders' (Gibbon, cap. 24), advised that resort should be had to the expedient which had served successfully on these previous occasions.

Jovian agreed. For two long days the Roman legions laboured at Dura, between Samara and Tekrit, to build an immense floating bridge, 'supported by the inflated skins of sheep, oxen and goats, covered with a floor of earth and fascines' (Gibbon, l.c.).

The attempt was a failure; the cause is not stated; probably it was due to lack of a sufficiency of skins, for the number required to span a river so wide as the Tigris would, be enormous. In the end, many of the soldiers ventured the crossing on light hurdles or on inflated skins; many were drowned or fell a prey to the wild Arabs, massed on the further bank.

BUOYED RAFTS

In the Old World rafts buoyed by inflated skins, as well as swimming floats made either from the skins of buffaloes, goats and sheep, are in most general use in Western and Central Asia, particularly upon the rivers of Iraq (FIG. 1) and those that have their source in the Himalayas and the other great mountain ranges of this region. On hill streams they are indispensable, as well for transit downstream as for ferry purposes. Sometimes the skins are those of buffaloes (FIG. 2); more generally they are of goats, less frequently of sheep; in Tibet, yak skins are employed.

For purely military purposes the Mongols and kindred peoples of nomadic habit, made constant use of swimming floats and buoyed rafts when overrunning the lands of Eastern Europe. The use of inflated skins for crossing rivers was common knowledge among them. Skins designed for this purpose were recognized items in the equipment of Mongol armies and each soldier had one in his marching kit; in desert regions it carried his water supply and when it was to be used as a float or a raft buoy, all that was necessary was to empty out the water and inflate with air and to see that all openings were securely closed and tied firmly. The employment of inflated skins as floats and as raft buoys enabled the 'Golden Horde', under Batu Khan, grandson of Genghis Khan, to cross the Volga, the Don, the Vistula, and the Danube, without check, in that hurricane onslaught upon Europe that culminated in the capture of Pesth in 1241 (1).

It is certain that no more practical device than this was available to an army commander in former times for the emergent transport of a body of troops across an obstructive river, seeing how buoyant an inflated skin float is and what a small space it takes up when deflated. Its weight is almost negligible, when the wool or hair has been removed.

Centuries earlier the Turco-Mongol Petzinaks had utilized the same method to ferry their soldiers and families across the rivers of South Russia (Karamzin, 1819, I, 180).

¹ Purchas in his *Pilgrimes* (1906 edn., xi, 178) quoting from R. Wendover, describes these floats as 'sewed skins artificially [ingeniously] made'. From this and from our knowledge of the wide extent of the use of inflated skins at the present day in Asia, it is clear that Gibbon (1791, xi, 215) was in error when he wrote of the 'Golden Horde' crossing rivers in 'leather boats which followed the army and transported their waggons and artillery'. Actually the soldiers would either swim their horses over, or cross upon single skins, while the waggons and artillery would be transported across upon *kelek*-rafts formed of a framework of tent poles buoyed up by numerous inflated skins (FIG. 3).

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Apart from its frequent use by nomadic hordes, the most striking example of the use of skin-buoyed rafts is the crossing of the Tigris by the army of the Persian, Nadir Shah, in February, 1733. One raft alone was employed; to make it an immense number of date palms were cut down and their trunks lashed together to form a huge platform, rendered buoyant by the attachment beneath of a vast number of inflated skins said to have been those of camels (?). By this means 2500 men were transported across during the first day and a further 15,000 on the following day. After that, the raft fell to pieces and much time was lost in repairing it.

A short time later, having defeated the Turks with great loss, Nadir Shah invested Baghdad on all sides and 'repaired the original raft and ordered others to be made, which were continually passing and repassing the river Tigris with ammunition and stores'. (Sir Wm. Jones, 1773, 48-50).

SWIMMING FLOATS

Older still than the use of buoyed rafts is that of inflated skins employed singly as a swimming support. Assyrian bas-reliefs frequently depict soldiers afloat on skin floats. The oldest and most notable of such sculptures are those brought by Sir Henry Layard from Nimrud, the ancient Calah, where they decorated the palace of Ashur-nasir-pal III, King of Assyria from 883 to 859 B.C. (2). In these, Assyrian soldiers are depicted as swimming rivers supported on inflated skins, presumably those of goats (Nimrud Gallery, nos. 7*b* and 8*b*); soldiers of the defeated enemy employ the same device in their attempts to escape (*ibid.* no. 6*a*).

In all these sculptured scenes, the after end of the skin barely reaches to the swimmer's groin and each soldier holds the end of one leg to his mouth, appearing to be blowing into it (FIG. 3). Under ordinary circumstances, when haste is not imperative, the inflating orifice, to-day, would be closed securely by a lashing of cord to prevent leakage. In emergencies or when the distance to be traversed is short the open leg of the float may be held, twisted, in one hand, but if this hand be required for swimming or for gripping the bag, then the orifice must be held closed with the aid of the teeth and it is this attitude that has given rise to the erroneous idea that the swimmer is blowing into the skin. The former of these two ways of keeping the skin from losing air, I have noted when watching the men and boys who swim the second Nile cataract with the aid of inflated goat skins.

From the record preserved for us in these Assyrian sculptures it is clear that all Mesopotamian soldiers of old time, both Assyrian and Babylonian, as well as Elamite, carried, as an essential part of their field equipment, a deflated goat skin, ready for inflation and use, whenever a river crossing had to be negotiated. That a similar military equipment had a very wide distribution in ancient times is shown by the reference in Caesar's account of his campaign in Spain (Book I, cap. XLVIII) to the use of 'bladders' by the Lusitanian and lightly-armed soldiery of Hither Spain embodied in the opposing forces fighting in Pompey's cause. These forces, according to Caesar, were enabled by the use of 'bladders' to cross the river Segre, near the modern city of Lerida, and thereby to harass Caesar's foraging parties. 'These men', he says, 'could readily swim across the river, because it is the custom of all these people not to join their armies without bladders', the exact counterpart, as we have seen, of what prevailed in Mesopotamian campaigns of an earlier period.

² Usually this king has been reckoned as the second of this name but recent research removes him to the third place.

To-day the inflated skin float is still used by Albanians to cross the river Drin, a lingering relic of a wider distribution in olden times. Baron Nopcsa states (1925, 142) that it was in use in the Middle Ages on the Upper and the Lower Danube. He quotes an old record to the effect that the Hungarians were accustomed to cross the river on inflated skins at the beginning of the ninth-century—evidently a survival from the days when Turco-Mongolian invaders overran the country. Even so, there still remains the probability that the custom had been already known in Western Europe centuries earlier if we are to attach weight to Caesar's statement, quoted above. If our inference from that be correct, the use of skin floats on the Danube has to be considered as a reintroduction of the device into Europe. The presence of skin-buoyed rafts in Morocco in recent times as for instance the account by Jackson (*Letters . . . of journeys through . . . Barbary*, 1820, 194) of witnessing the passage of the troops of Mulai Teib across the river Sebu 'on rafts made of inflated cow-hides, covered with planks and straw', suggests that here also there has been a reintroduction brought about through Arabs acquainted with the buoyed rafts of the Tigris and Euphrates.

Skin floats are well known in Egypt where, till recent years, the river thieves regularly made use of them; Bruce (1813, I, 118) describes their plan of operations; how they steal aboard boats at night when at anchor or falling leisurely downstream, such time as they believe the crew to be ashore or off their guard. The thieves drift down noiselessly upon the vessel which they have marked as their victim; they lie prone on their goat-skin floats, paddling quietly with their hands. Arab river-thieves adopt the same tactics on the Tigris and Euphrates.

Another curious use of inflated skins is related by Waddington and Hanbury (1822, 228), who travelled up the Nile early in the nineteenth century; they state that the Shaiqiya Arabs, during the sojourn of the Mameluks in Dongola, were, 'accustomed to raid villages in the neighbourhood during the night after swimming their horses across the river, by tying empty leathern bags under [?] their bellies'—presumably air-inflated.

With camels a different procedure appears necessary, for Slatin Pasha (1896, 608) relates how, when making his escape from Omdurman, the Arab guide who had to see his party across the Nile near the fifth cataract, ordered the camelmen, after taking the saddles off their camels, 'to blow the water skins full of air and tie them round the camels' necks' before crossing the river.

Another semi-military skin-float incident is that connected with the attack in 1680 by Capt. Bartholomew Sharp and his buccaneers upon the town of La Serena, five miles from Coquimbo, on the west coast of South America. The town had been captured by the raiders but the ransom demanded was not forthcoming. Angered by disappointment, the buccaneers set fire to the town. The Spaniards resolved upon revenge. An Indian was sent out from the shore, swimming on an inflated horse skin. In the darkness he swam to Sharp's ship, the *Trinity*; oakum and brimstone were thrust into the space between the rudder and the sternpost, and fired by the Indian. Fortunately for the buccaneers, the alarm was given early and the fire extinguished before it had gained a hold on the hull (Masefield, 1922).

Raiders in Asia are also apt to utilize swimming floats to cross rivers in their path. A century ago Murad Beg's Usbeg raiders were accustomed when on foray, to cross the Oxus in flood, swimming on inflated skins (*massaks*), and guiding their horses, which swam behind (Wood, 1941, 397). To-day the descendants of these banditti have turned smugglers and carry on a profitable and comparatively easy contraband traffic along the Russo-Afghan river-frontier at night, on the same kind of inflated skins (Cobbold, 1900, 180).

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There are or have been times when the lack of suitable skins or because of some special local reason, the substitution of some alternative type of float is necessary; the most usual are the unglazed pots commonly termed *chatti* in India, dried gourds and bundles of reeds. For military purposes, pots used singly as swimming floats or lashed together in raft form are rarities; I know of two instances only, but it seems likely that they were once more common, for these pots are in general use by fishermen on the Indus, who float down stream resting upon the open mouth of a large *chatti*, the while they hold a fishing net aslant in the water. It is in this region that raiding parties of the frontier tribesmen called Waziris, have been known to make use of pots similar to those of the fishermen, when they had to cross a river where no boats were available. Each man provided himself with a *chatti* about 2½ ft. in diameter; pushing this into the stream, the tribesman laid himself over the open mouth of the pot and propelled himself by kicking out with his legs and paddling with one hand while holding his gun in the other. In the *Illustrated London News* of 13 February, 1864, is an interesting sketch of 'A party of Wuzurees crossing the Indus on Water Jars'. As much practice is necessary to prevent the rounded pots from capsizing, it follows that at the time the sketch was made, this method of crossing a river must have been in fairly general use.

The only instance of a raft of pots being used in military operations is that given by Florus when describing the course of the Servile War of 73-71 B.C. In this, he relates how the insurgents (mostly Gauls, Germans and Thracians) under Spartacus, after having been driven by Licinius Crassus into the southern end of Calabria, were deserted by the Cilician pirates who had promised transport to Sicily; deprived of this means of escape, some of the most resolute endeavoured to cross the Strait of Messina on rafts constructed of round-bottomed jars lashed together by light poles and withies (*'dolia connexa virgultis'*).

As floats in military operations, gourds have had no place, and reed bundles either as floats or as rafts have had little, except in Mesopotamia, where in ancient times reed rafts had of necessity to be used by Assyrian and Babylonian troops whenever campaigning against the unruly dwellers in the great marshes. One of the best surviving records of such fighting, is a bas-relief from Nineveh which pictures a skirmish in the marshes of southern Mesopotamia (Layard, 1853, 585). Three large reed rafts, each manned by three Assyrian soldiers and a raftsmen who is poling the craft with a long quant, are pursuing three smaller rafts crowded with fugitives; among them are several women. These rafts are equal ended and flat-surfaced. A very slight sheer causes both ends to curve up slightly, terminating in a low point. The larger rafts have four sets of circumferential lashings; the smaller three. On the islands formed by the meandering of streams through the swamp, Assyrian horsemen guard the passages.

WICKER-FRAMED BOATS—CORACLES AND CURRAGHS

Few instances are on record of these peculiar craft having been used in military expeditions, but these, with one exception, have special interest for the people of the British Isles. The earliest and most notable of these accounts we owe to the genius of Julius Caesar. As already mentioned, Caesar when warring in Spain against the sons of Pompey, found his foraging parties being harassed by the enemy's Iberian allies who had crossed the river Segre at will, supported on 'bladders'. Worse still, two bridges across the river had been destroyed by a disastrous flood, thereby cutting his line of communication with Italy. The position was dangerous but Caesar with his usual versatility, was prepared with counter-measures. As we read in his *Commentaries* (*De Bello Civile*, I, cap. 4):

'When Caesar's affairs were in this unfavourable position, and all the passes guarded by the soldiers and horse of Afranius, and the bridges could not be repaired, Caesar ordered his soldiers to make boats of the kind that his knowledge of Britain a few years before [in 55-54 B.C.] had taught him. First, the keels and ribs were made of light timber, then the rest of the hull of the boats was wrought with wicker-work, and covered over with hides. When these were finished, he drew them down to the river in waggons, and transported in them some soldiers across the river, and on a sudden took possession of a hill adjoining the bank. This he fortified at once and finished it in two days'.

Critical examination of this passage shows that, contrary to the general belief, these vessels could not have been river coracles. Caesar refers specifically to the presence of a keel and of light ribs. Now no coracle has a keel, neither would waggon transport have been necessary—each soldier would have carried his coracle on his back. Other decisive evidence that these were not coracles, but boat-shaped curraghs, is the certainty that no adequate body of troops could be ferried across a river in flood by men untrained in the management of coracles. On the other hand, men with but slight knowledge of rowing, could pull the heavy oars used in wood-framed curraghs. From the wording of the account it is clear that Caesar had encountered skin-covered craft of boat shape during his raids into south-east England. It is also to be inferred that this type of wicker-framed vessel was not in use anywhere in Gaul, and was characteristic only of Britain.

Nearly 600 years elapse before we hear again of these wicker craft; used for military operations in Britain. Writing in the 6th century, Gildas in his historical work, *De Excidio Britanniae*, laments the straits suffered by Britain after the withdrawal of the Roman forces. Habington translates the passage in picturesque language (1638) thus:

'They [the Romans] were no sooner gone home, but as the brownish bands of worms and eamots, which in the height of Sommer, and encreasing heate, doe swarming breake out of their most straight and darkesome dens, the dreadful routes of Scots and Picts . . . aland out of their ships wherein they were transported over the Scithian vale' [St. George's Channel].

In the Latin of the original passage, the word translated as 'ships' should be replaced by 'curraghs' for in Gildas' text we find the words *de curicis*.

The most famous of the Irish and Pictish invaders was Niall of the Nine Hostages, King of Ireland from A.D. 379-405. He ravaged the coast of Wales repeatedly and even effected settlements there. Eventually he was chased away by the Romano-British general Stilicho.

Thenceforward the coracle and the curragh disappear from British military history until we come to the reign of Edward III, when we find Froissart stating in his *Chronicles*, under the date 1360, that the English army which invaded France in this year, was accompanied by more than 6000 carts for the transport of tents and all possible requirements needed by the noblemen and wealthy people who participated in the adventure. Says Froissart:

'Upon these carts were also carried many vessels and small boats (*nacelles et batelets*) made very artfully of boiled leather (*cuir bouilli*). They were large enough to carry three men and were employed for rowing and fishing on lakes and ponds however large these might be'.

Of more direct military value were the boats covered with leather which Holinshed in his *Chronicle* (1577, p. 1171) informs us were among the preparations made by Henry V for his first expedition into France, A.D. 1414. Their purpose we are told, was 'to

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pass over rivers'. These craft appear to have been large coracles rather than curraghs, used probably for reconnoitring and for carrying messages and despatches. That they were paddled by Welshmen is extremely likely, for Welsh troops—lightly equipped footmen—are mentioned as inflicting great execution in the French ranks during ensuing engagements, by their skill as archers and by their ham-stringing exploits when mingling among the enemy's cavalry.

In India, coracles of the kind still in use on the rivers Kistna and Tungabhadra were, until the *Pax Britannica* put an end to local warfare, regularly used to transport troops across these great rivers of the Deccan (FIG. 4). The Vijayanagar Rajas, for instance, regularly assembled a fleet of coracles on the Tungabhadra whenever their campaigning required the crossing of this river (Sewell, 1900). They were well adapted for the purpose, for some of the largest of present-day ferry coracles are said to be capable of transporting 50 men; a fully-equipped 12-pounder cannon is also known to have been carried across the river in one of these bowl-shaped craft.

Wellington, like Caesar, was quick to appreciate the useful purposes to which wicker-framed craft may be put; we find him sending instructions to Lieut. Col. Munroe on 3rd April, 1803,

'to have 20 basket boats made in the Ceded Districts. They should be the size of 10 feet and 3 feet deep, and I wish that they may be covered with *double leather* [the Duke's italics]. The leather should be sewed with thongs and of such size as to cover the gunwales of the boats all round'.

(Chesney, 1850, II, 642). Chesney points out how the great commander, with a forethought peculiar to himself, desired an additional leather cover to be fitted to ensure greater safety.

BIBLIOGRAPHY

- 1884. ARRIAN (Translation). *The Anabasis of Alexander*. Translated by E. J. Chinnock.
- 1813. BRUCE, JAMES. *Travels to discover the Source of the Nile*, 1768-73. 3rd edn. Edinburgh.
- c.45 B.C. CAESAR, JULIUS. *De Bello Civile*.
- 1850. CHESNEY, F. R. *The Expedition for the Survey of the rivers Euphrates and Tigris . . . in 1835-37*.
- 1900. COBBOLD, R. P. *Innermost Asia*.
- 1791. GIBBON, E. *The Decline and Fall of the Roman Empire*.
- c.560. GILDAS. See Habington.
- 1638. HABINGTON, T. *The Epistle of Gildas* (translation).
- 1577. HOLINSHED, R. The last vol. of *The Chronicles of England, Scotland and England*.
- 1770. JONES, SIR W. *The History of Nadir Shah, King of Persia*.
- 1819. KARAMZIN, N. M. *Histoire de l'Empire de Russie*. French translation. Paris.
- 1853. LAYARD, SIR A. H. *Discoveries in the Ruins of Nineveh and Babylon*.
- 1922. MASEFIELD, J. *On the Spanish Main*. 2nd edn.
- 1925. NOPCSA, F. *Albanien : Bauten, Trachtend und Geräte Nordalbanien*. Leipzig.
- 1927. REY, C. F. *In the country of the Blue Nile*.
- 1900. SEWELL, R. *A Forgotten Empire [Vijayanagar]*.
- 1896. SLATIN PASHA, *Fire and Sword in the Sudan*.
- 1822. WADDINGTON, G. and HANBURY, B. *Journal of a Visit to some parts of Ethiopia*.
- 1841. WOOD, J. *Journey to the Source of the River Oxus*.

Gwynedd and the Votadini

by A. H. A. HOGG

IN the course of a recent paper (1), Mr W. J. Hemp has put forward the hypothesis that the fourth-century movement of population from the Votadinian area to Gwynedd was preceded by a similar transfer carried out during the mid second century reorganization of the northern frontier zone. The only evidence for this is a suggested resemblance between the early farmsteads in the two areas. In this note the question will be discussed with reference to the Northumbrian material.

It is desirable to give some indication of how fully the two districts considered have been sampled. Unfortunately, I cannot claim any personal knowledge of the remains in North Wales, but this disadvantage has been largely counterbalanced by the publication of the Anglesey inventory (2) and the paper cited. On the other hand, I have visited about 120 of the Northumbrian sites at times when they were not obscured by bracken, and in doing so have traversed much of the adjacent countryside. This number represents about half the existing sites in the centre of the county. I have not examined the upper North Tyne valley and the low coastal area in the north at all adequately. Published accounts, however, do not indicate much difference in the character of the sites in these districts. It is perhaps worth noting here that although in order to economize space it was necessary to omit details of sites which seemed probably medieval from my paper on Northumbrian native settlements (3), an attempt was there made to give a fairly comprehensive account of the early 'native' remains, and the majority of the plans reproduced were surveyed in order to provide representations of typical sites. Of the two taken from other surveys, that of Greaves Ash was checked and revised on the site, while the original publication on which that of Milking Gap was based is exceptionally careful and accurate. The plans are therefore a representative set, drawn to a uniform scale and convention. It is desirable, however, to amplify the account given, in order to indicate the similarities and differences between the two areas. This can most conveniently be done by discussing the types of structure individually.

UNENCLOSED HUTS. It seems probable that these are more common in Northumberland than published records suggest, but it is easy to pass close to these sites without seeing them, even in winter, and they could easily be destroyed to facilitate cultivation, or for wall building. Huts were formerly numerous on Swint Law (4) (*ca.* 55° 33' 10" N, 2° 05' 30" W) but few now survive. Plans are given of two sites on Horton Moor. These may not be wholly typical, but it is not possible to define a 'type' from the few examples known. One or two huts standing alone on moorland are perhaps more usual.

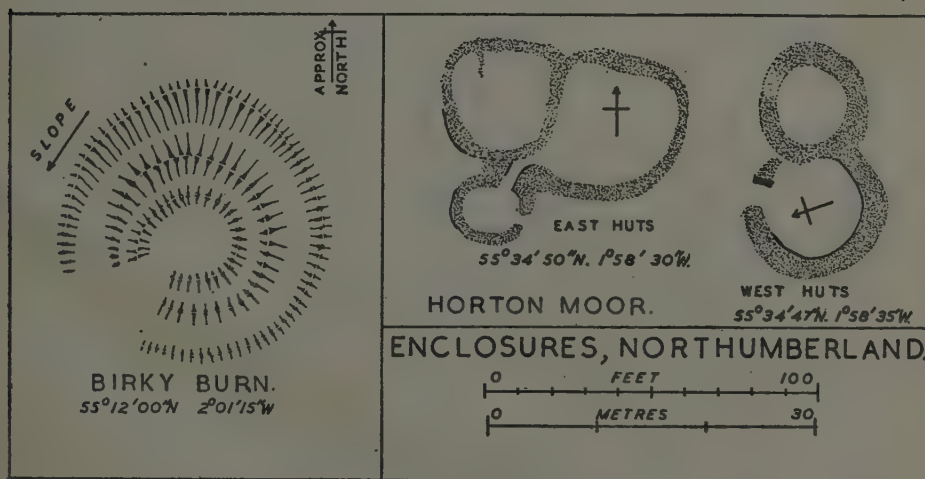
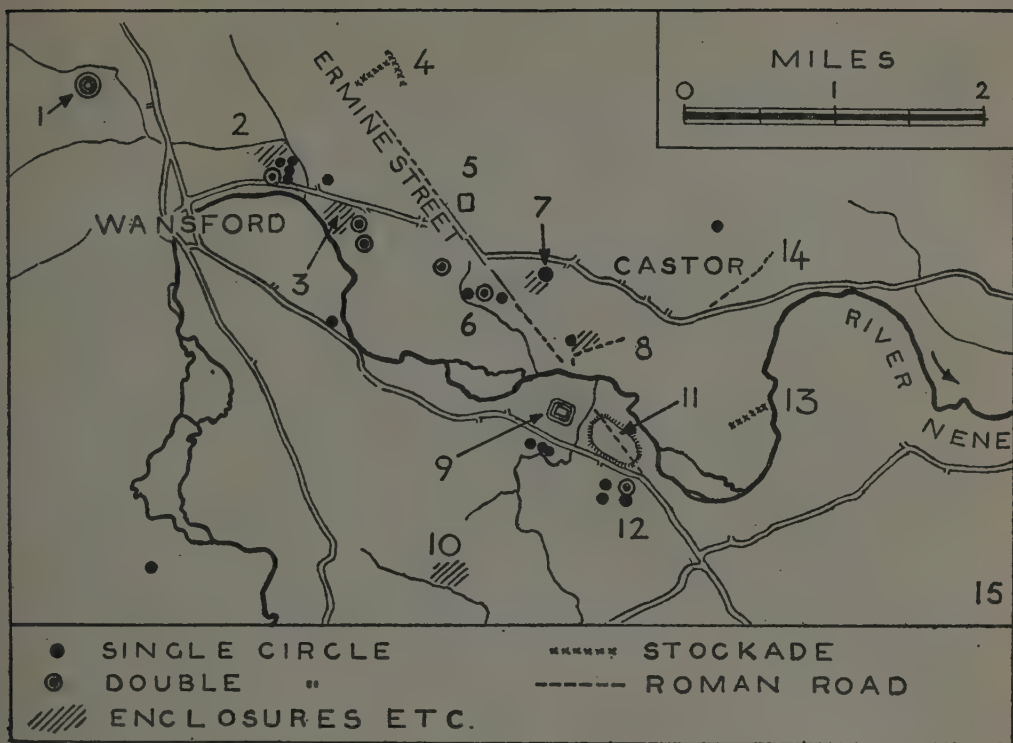
PADDOCKS. I have not met with paddocks associated with round huts. In several parts of the Cheviots traces of lightly constructed rough walls meander vaguely over the

¹ W. J. Hemp and C. A. Gresham, 'Hut Circles in North-west Wales', *ANTIQUITY* 1944, XVIII, p. 183. The hypothesis discussed forms only a minor part of the paper.

² *R.C.A.M. Wales, Anglesey*.

³ *ANTIQUITY* 1943, XVII, p. 136. References and positions given there are not repeated unless essential to the following argument.

⁴ *Berwicks. Nat. Club* 1856-62, pp. 431-53.



hills to form enclosures, but where I have examined these in detail, they seem to be associated with rectangular houses which are probably medieval. Wherever these walls make contact with native sites, the latter have been cleared of their internal structures. Good examples of these can be seen south of Brough Law.

TERRACES. The terracing associated with medieval cultivation (5) and later ploughing must certainly have obliterated many earlier remains, but whatever the cause, terraces of the type associated with the Gwynedd homesteads or the Cornish Courtyard houses (6) are rare in Northumberland. I have not met with any examples which I should accept even as highly probable. The rectangular 'medieval' houses sometimes stand on ground which seems to have been artificially terraced, and their walls sometimes retain soil washed from the hillsides, and thus give an impression of artificial terracing. Although, therefore, it is likely that early cultivation may have left traces in Northumberland, very definite evidence as to association is desirable before a given system of terraces or enclosures is assigned a connexion with a particular site.

Further, the relative infrequency of querns does not suggest an extensive agriculture, and in spite of their thin soil I am inclined to regard some of the internal sub-divisions of sites such as Milking Gap, Lower Brough Law, and Tower Tye as cultivated 'gardens'.

CONCENTRIC CIRCLES. One site in Northumberland does indeed suggest very strongly that there is some connexion between Gwynedd and the Cheviots. This stands near the Birky Burn ($55^{\circ} 12' 00''$ N, $2^{\circ} 01' 15''$ W) and it will be seen from the plan that it is an example, although a small one, of the Concentric Circles recorded by Mr Hemp and Mr Gresham. Until the publication of their paper I knew of no other example of this type of structure. It lies on a moderate slope, near a small stream. The whole area is very wet, and the monument is too overgrown with peaty turf for details of construction to be visible.

FORTS. From the Anglesey inventory it appears that the multiple ring fort typical of Northumberland does not occur (7), but structures consisting generally of a single rampart following a natural line of defence are usual. Additional ramparts sometimes occur along subsidiary lines which are naturally strong (8). This type of fort occurs also in the Votadinian area. Yevering Bell and Traprain Law are examples, and the ruins of one lay partly beneath the rectangular enclosure at Gunnar Peak. The type is so simple, however, that no great significance can be attached to its presence in both areas.

RECTANGULAR EARTHWORKS. The numerous rectilinear earthworks in south Northumberland may be paralleled by one or two Anglesey sites (9), but isolated rectangular sites are not of much diagnostic value in areas subject to Roman influence.

ENCLOSED HOMESTEADS. It is upon these that the argument for a second-century transfer of population rests most heavily. Unfortunately, too few accurate plans are available for comparison, and the discussion therefore becomes almost entirely a matter of subjective judgment, in which Mr Hemp considers that the remains in the two areas

⁵ Mr Graham's conclusions (*PSA Scot.* 1938-9, pp. 289-315) are equally applicable to the Northumbrian terraces.

⁶ These are artificial, and larger than Mr Hemp's account would suggest. H. O'N Hencken, *Archaeologia* 1933, vol. 83, pp. 237-84.

⁷ *R.C.A.M. Anglesey*, Parciau, p. 63, and Caer Idris, p. 105, might be derivatives.

⁸ *R.C.A.M. Anglesey*, Din Sylwy, p. 81; Dinas Gynfor, p. 37; Caer-y-Twr, Holyhead, p. 25.

⁹ *R.C.A.M. Anglesey*, Llifad, p. 38; Caer Leb, p. 104; Bryngof, p. 131.

show close similarity, whereas I regard the resemblances as slight and capable of alternative explanations. Further, Pant-y-Saer (10), the excavated site which shows the closest resemblance to Northumbrian remains, has been shown to be later than the fourth century transfer, and has produced definite evidence for a connexion with the Votadini, so that some similarities are to be expected.

Of the dated second-century sites, however, Clynog Fawr has so many features in common with the Cornish Courtyard houses that they must surely be derived from the same source. Courtyard houses of this type, with the rooms embedded in thick walls, do not occur in Northumberland. Some possible prototypes might be suggested there, but a pedigree which places the prototype in one area and the derivative in another widely separated deserves little credit. Both the plans published by Mr Hemp, and that of Penmon (11) in Anglesey seem to be thick-walled courtyard houses, but even if these are rejected sufficient ordinary enclosed homesteads remain to require consideration.

In the Cheviots, by far the most common homestead is an oval enclosure, with a few huts opposite the entrance, and a hollowed area, perhaps a pond, in front of them. Hartside Hill is typical. It seems reasonable to suppose that this would form the most usual type in any area intensively settled by the Votadini, unless they were placed in Roman-planned settlements. Some sites of this kind do occur in Anglesey, but the majority of the homesteads there have a sharply angular polygonal outline. My present view, which may require modification when more evidence becomes available, is that whereas one Anglesey homestead could be placed among those in Northumberland without causing remark, a group of them would appear distinctive.

In view of the distinction between orthostatic and coursed masonry in Wales, it may be noted that both types occur in Northumberland, but seem to show no evidence for selective association with particular structures.

Having described briefly the contrasts and resemblances of the characteristic structures of the two areas, the question of other evidence for transfer may be considered.

Reference to Collingwood's paper (12) shows that the transfer to Germany is vouched for by the appearance of a trumpet brooch, with some other objects, in the German area. The brooches are of a type which seems to have developed in the frontier areas of Roman Britain about A.D. 120, and it is these brooches, together with some rather indefinite literary evidence, which indicate the area from which the transfer took place. There seems to be no example of these brooches in Gwynedd, and this absence becomes more striking when the relatively productive character of the second century sites, and the commonness of the brooch type in its original home, are considered. Moreover, the single late site excavated, Pant-y-Saer, has produced an example of a far less common type of brooch which does derive from the original home of the Votadini. It is perhaps unjust, however, to stress this contrast too much, as luck plays so great a part in excavation that only many combined results really provide significant statistical evidence.

To sum up, the position seems to be that there is one striking similarity, and a certain degree of general resemblance, between the structural remains in the two areas, but small objects and literature give no support to the view that there was any transfer of population before the fourth century. Is it necessary to postulate such a movement in the second century?

¹⁰ *R.C.A.M. Anglesey*, p. 72.

¹¹ *R.C.A.M. Anglesey*, p. xxviii.

¹² *Romano-Celtic Art in Northumbria. Arch.* 1930, LXXX, pp. 37-58.

ANTIQUITY

On the present evidence, a simpler explanation seems adequate. The general uniformity of culture over the British Isles at the end of the Late Bronze Age seems archaeologically established, although there are minor local variations (13), and enclosed homesteads and lynchets are associated with this culture in Sussex, while unenclosed huts and small fields are found in Cornwall (14). It is to be noted also that the districts intensively occupied by representatives of 'Iron Age' cultures seem limited to the south and east (15), although their influence extended over a larger area. It seems more reasonable, therefore, to regard the similarities between cultures in the north and west areas as due to their development from a common stock, rather than to postulate a transfer of population, unless strong evidence is found for such an assumption. The cultural poverty of these sub-bronze age people may perhaps be explained by alien occupation of the richer lands of the south and east.

The discussion in this note once again emphasizes the unevenness of research into the pre-Roman iron age. In the south, a detailed picture of the geographical and chronological relations of the cultures has been worked out, and before the war numerous trained archaeologists were actively engaged in extending its scope and detail. There is no reason to doubt that the early history of the north was equally complex, perhaps due to internal warfare rather than invasion. For example, there are frequent traces in the Votadinian area of three or more periods when fortifications were constructed or repaired. Yet the number of active workers engaged on the study of non-Roman sites in the north and west is very small. The most urgent need is for detailed and accurate field survey, as the admirable work of the Historical Monuments Commissions is so handicapped by inadequate resources that their progress is of necessity slow. But excavation on an adequate scale is also needed. It is greatly to be hoped that when field work and excavation again become possible other than for immediate salvage purposes, the distribution of work over the country will become more even. The Highland Zone sites are notoriously barren and difficult to excavate, but for a knowledge of the pre-history of these islands work on them is just as necessary as on the relatively easy and productive settlements of the chalk downs.

¹³ Childe, *Pre-hist. Communities*, p. 146.

¹⁴ Dorothy Dudley, 'L.B.A. Settlement on Trewey Downs, Zennor', *Arch. Journ.* (1941) xcvi, p. 105.

¹⁵ Childe, *Pre-hist. Communities*, fig. 83. Fox, *Personality of Britain*, 4th ed., figs. 5, 11.

Saint Congar

by REV. CANON G. H. DOBLE*

(Continued from p. 43, March 1945)

We shall never get a right idea of the real nature of any of these early medieval Lives of saints until we try to obtain some notion of where and when and by whom each Life was written and for what purpose.

The original author of the *De Sancto Cungaro* and most of the different revisers who have retouched and added to it must have been clerks of Wells. The twelve canons stated to have been placed by Cungar in his foundations in Somerset (c. 13) and Glamorgan (c. 15) were clearly suggested by the twelve canonries of Wells Cathedral (62). Monasteries and cathedrals were the places where early Lives of saints were usually composed. Breviary lections were required for the saints honoured in the diocese or whose churches were appropriated to the abbey, and clerks or monks of literary tastes, when they visited the parishes belonging to their house to collect the tithes, would be in a position to note down the local traditions. We observe that the chapters in the first section of the *De S. Cungaro* are all very short—they are, in fact, of the usual length for lessons for matins in a breviary. Wells was interested in the parish of Watchet, hence the *Vita S. Decumani* in *Nova Legenda Anglie*, to which I have already referred (63). Wells was also interested in Congresbury, as we have seen. The original writer of the *De S. Cungaro* has a great deal to say about Congresbury—it is the only place (with the exception of Constantinople, Rome and Jerusalem) which he mentions by name. He has preserved for us the tradition he had (no doubt) heard there about the yew-tree in the churchyard (64), and he claims to have learned by local tradition about the saint's body being brought back to Congresbury after his death. The extraordinary statement he makes, and on which he insists in a series of tedious repetitions, about the punishment overtaking kings who visited the church and its precincts, is explained by the dispute between the cathedral and the crown over the ownership of Congresbury (65). The series of stories added in the later chapters about other princes, who were blinded or 'liquefied' because they questioned

* With much regret, we mention the death of Canon Doble on 15 April.

⁶² Grosjean, *op. cit.* p. 119.

⁶³ See above, p. 36, and 'S. Decuman', in my 'Cornish Saints' series, no. 28, p. 7.

⁶⁴ 'The Yew tree in the churchyard is locally known as St. Congar's Walking stick' (Rev. C. W. Heale, in *Somerset County Gazette*, 20 and 27 January 1922). Similar stories are told of S. Benignus of Glastonbury and of S. Indract. See my 'S. Indract and S. Dominic', p. 20.

⁶⁵ Fr. Grosjean was the first to point this out—'Adeo flagranter invehitur in reges: hunc excaecat, alterum opprimit, illum liquefacit, minatur omnibus' (*op. cit.* p. 119).

Cungar's possession of land in Wales, all point the same moral, and have been obviously selected (or invented) for that purpose. It is the one subject that interests the author and the revisers of the *De S. Cungaro*, and was no doubt the reason for its composition.

It is true that Dr Armitage Robinson suggested, in the second of the two articles in the *Journal of Theological Studies* (October 1921, pp. 15-22), to which I have already referred, that the author of the Life of S. Cungar was the famous Caradoc of Nantcarvan, a Welsh clerk from Glamorgan who lived in his later years at Glastonbury and there wrote a Life of S. Gildas (66). His reasons were based, first, on the fact that a peculiar and very annoying trick of style is characteristic of both these lives, and secondly, on the considerable amount of subject-matter which they have in common, clothed in suspiciously similar wording. But he had observed that the *Vita Gildae* is not the only Life which contains statements and phrases which re-appear in the *De S. Cungaro*, for there are also striking parallel passages in two Lives of Welsh saints in the British Museum manuscript Vesp. A, xiv (printed in *Lives of the Cambro-British Saints*)—the *Vita S. Cadoci* and the *Vita S. Iltuti*, which he believed to be of later date. He therefore concluded that the authors of the latter Lives had copied the Life of S. Cungar.

The argument from similarity of style is the more convincing of the two, since the incidents common to the Lives of S. Gildas and S. Cungar may simply show that the writer of the latter copied the former and not that the same writer wrote both Lives. The exasperating trick of style used by the author of the *De S. Congaro*, which the Dean was the first to notice, consists in 'the frequent repetition of the same word, or the same root, in various formations'. The reader will find some examples of it on p. 37, note 29, and p. 38, note 34, and Dr Robinson has given a very large number, drawn from both Lives, in the second of his articles in the *J.T.S.* (67).

But the Dean had, strange to say, not noticed that this very same trick of style is used again and again by the author of the *Vita Iltuti* (68), so that the arguments which seemed to prove that Caradoc of Nantcarvan wrote the *De S. Congaro* would prove equally that he wrote that Life too, which I have shown to be impossible (69). It is also found in two other Lives in Vesp. A, xiv,—the *Vita S. Gundlei* and the *Vita S. Tathei* (70), while a feature common to all three of these Lives and also to the Life of S. Cungar, but *not* found in the *Vita Gildae*, is the use of hexameters at the end of chapters. In addition, the *Vita S. Gundlei* and the *Vita S. Tathei* contain several of the passages common to the *Vita Gildae*, the *Vita Iltuti*, and the *De S. Cungaro*—I have given them in the footnotes to my paraphrase of the last-named Life.

The question, then, is not so simple as Dr Robinson thought, and the similarities in style and contents between the *Vita Gildae* and the *De S. Cungaro* are part of a larger

⁶⁶ For Caradoc of Nantcarvan see an article by Prof. J. S. P. Tatlock in *Speculum*, April 1938. He was a contemporary of Geoffrey of Monmouth (d. 1155) who refers to him in the last chapter of the *History of the Kings of Britain*. For his *Vita Gildae* cf. F. Lot, *Mélanges Bretonnes*, pp. 267 f.

⁶⁷ October 1921, pp. 15-17.

⁶⁸ I have given examples in my *Saint Iltut* (Welsh Univ. Press Board, 1944, p. 29).

⁶⁹ *ib.*

⁷⁰ e.g. *Vita Gundlei*, c. 7, 'ut coronemini, cum sitis coronandi, estote ergo coronati'. *Vita Tathei*, pp. 255 and 257, 'fama famosissimi'; p. 256, *primeve primordio, recepti recipi, balneare . . . balnearent . . . balnei*; p. 257 *domuerat indomiti, audiret et audita retineret*; p. 258, *defendere . . . defendat . . . defendenda*; p. 259, *injuriam injuriosus, dampnarentur dampnabiles, ammonitus ammonitione, habitationis habitantibus*; p. 260, *ducentes ductam*; p. 262, *auditis auditore*; p. 263, *odorificus odorifere odorem*.

problem. In my 'S. Iltut' I have suggested that the *Vita Iltuti* is a local Llantwit Life retouched for publication by Caradoc of Nantcarvan or one of his school. After a careful study of the *Vita Gundlei* and the *Vita Tathei* it seems to me clear that the same hand which rewrote the *Vita Iltuti* has also revised the two other Lives (71). It is difficult to avoid the conclusion that the hexameters in these three Lives and in the Life of S. Congar are all the composition of one writer. The entire absence of hexameters in the *Vita Gildae* seems to tell against that writer being Caradoc (72). There may have been a writer in Glamorgan or Monmouthshire who rewrote the Lives of the saints of Llantwit, Newport and Caerwent for inclusion in the *Legendary*, drawn up at Brecon and Monmouth Priors, which we have in *Vesp. A*, xiv. Dr Robinson's discovery of W has thus put us on the track of the solution of the hitherto un-attempted problem of the composition of that most important collection of Lives of Welsh Saints, but at present no definite conclusions can be arrived at.

Like these three Welsh Lives, the *De S. Congaro* is probably a local Life—written, in this case, at Wells, and retouched (72^a) by a professional hagiographer whose style and whose repertoire are unmistakable. If my suggestion is correct, and the *Vita Iltuti* has been rewritten by someone of the school of Caradoc of Nantcarvan, and if the same writer also revised a Wells Life of S. Congar (73), we have a satisfactory explanation of the very considerable amount of material common to those two Lives, though it is not easy to see why, if both have been edited by the same hand, the Life of S. Iltut should be so well-written and that of S. Congar so exceedingly poor and feeble. In any case, the Life of S. Iltut was not an imitation of that of S. Congar, still less was that of S. Cadoc. Dr Robinson's contention that 'the writer of the Life of S. Cadoc had before him the Life of S. Congar' cannot be admitted. Instead of being a later Life, as he fancied, it is the earliest of them all, being written by Lifris, Archdeacon of Glamorgan, at the very beginning of the 12th century, and has been freely copied by the writers of the *Vita Iltuti*,

⁷¹ The resemblances between the *Vita Gundlei* and the *Vita Iltuti* are very close indeed. In each we find the hand of a practised writer, indulging in long flights of rhetoric (the first chapters of the two Lives should be compared). Long speeches put into the mouths of angels are common to both Lives. Each has been divided into chapters by a reviser; c. 4 in the *Vita Gundlei* begins in the middle of an angel's speech and ends clumsily with the words 'Inde dicebat':—what he said being contained in the hexameters with which c. 5 begins. Both introduce 'Dubricius, Bishop of Llandaff'. It should be observed that a detail in Caradoc of Nantcarvan's *Vita Gildae* (c. 9) seems suggested by the story of the Orkney pirates raiding the Severn coast in c. 12 of the *Vita Gundlei*.

Similarities between the *Vita Tathei* and the *De S. Congaro* have been noted where they occur in the latter. The *septem disciplinarum* of the *V.T.* (p. 258) may be compared with similar statements in the *Vita Iltuti*, c. 1 and c. 7; while the story of the 'canonicos horis constitutis visitantes oratorium' on the same page of the *V.T.* is a repetition of a statement in c. 12 of the *V. Iltuti*. There are no chapter headings in the *V.T.* (Some of the chapter headings in the *De S. Congaro* look suspiciously like some in the *Vita Iltuti*).

⁷² Caradoc uses in his *Vita Gildae* the name *Aestiva Regio* for Somerset. But Fr. Grosjean points out (op. cit. p. 104) that the Welsh still call Somerset *Gwlad yr Haf*, so this fact only shows that the author of W. was a Welshman. [A new Life of S. Cadoc, by Caradoc of Nantcarvan, has just been discovered, after my study of Saint Congar had been finished. The evidence it affords for the solution of the problem here discussed is so important that, to avoid confusion, I have dealt with it briefly in a final note].

^{72a} The reviser has clumsily added a passage to c. 3, and the whole of c. 5. I have already (p. 37, note 31, and p. 38) called attention to the dislocations caused by these tinkering.

⁷³ Fr. Grosjean suggested (op. cit. p. 119) that the Chapter of Wells invited Caradoc to write a Life of S. Congar.

the Book of Llandaff and the Life of S. Cungar. Dr Robinson himself points out (74) how natural the expression 'fluenta doctrinae flagrantius sitiens' in the Life of S. Cadoc is, and how absurd is the mixed metaphor 'doctrinae suae fluenta seminabat' in the passage in the Life of S. Cungar which imitates it. All the incidents and expressions common to these two Lives have been plagiarized from the former by the latter, and not *vice versa*.

Having attempted to deal with the very thorny question of the authorship of W, let us see how H has revised and added to W.

Dr Robinson has pointed out how H corrects the affectations of W. 'The reviser gets more and more impatient of this annoying trick of style. In his revision of the remainder of the Life scarcely a single example of it has been allowed to survive'. Otherwise the variant readings of c. 1-12 are, with one very important exception, of comparatively little interest, and the list of headings of chapters prefixed to W shows that its missing chapters must have contained in substance all the incidents in c. 12-17 in H. The exception to which I refer is the statement in c. 6 in H, repeated in c. 16, that Cungar is the same person as the famous Glamorgan saint Docco (75) or Docgwin, the founder of Llandough (*alias* Llandocho Vawr) near Cardiff, the third of the three chief monasteries of Glamorgan, whose abbots are so often mentioned in the Book of Llandaff (76), and which had daughter establishments at Llandocho Fach near Cowbridge and at Docco (77) in Cornwall (mentioned in the *Vita Samsonis*). The question is not only the most important one in the whole problem before us as deciding the identity of the saint, but it also gives us the most promising clue to the history of the composition and subsequent revision of the *De S. Congaro*.

In c. 6 W merely states :—

'Congarus enim apud Britannigenas revocabatur. Non immerito (78) doctrinae suae fluenta seminabat per patriam; quocumque ibat, non cessabat predicare'. In H this has been altered as follows :—

'Congarus enim apud Angligenas vocabatur; Doccuinus, quasi *doctor*, apud Britannigenas vocabatur. Nec immerito, quia doctrine suae', etc.

⁷⁴ *J.T.S.*, October 1921, p. 19.

⁷⁵ See J. Loth's article 'Saint-Doccus' in the *Mém. de la. Soc. d'Hist. et d'Arch. de Bretagne*, 1929. The very important part which this pan-Celtic saint must have played in the religious history of Wales is shown by the number of places bearing his name in Wales, Cornwall and Brittany and also by the references to him in early Irish documents. The *Catalugus sanctorum Hiberniae*, which dates from the 8th century, in the section dealing with saints who lived between 544 and 598, says that the Irish 'received a mass from Bishop David and Gil[d]as and Docus, who were Britons'. The Annals of Ulster, however, insert 'Quies Docci episcopi sancti Britonum abbatis' on 1 January 473. It is a pity no Life of him was written. In Brittany he is the eponym of Saint-Tohou in Primelin near the Pointe du Raz, and of Saint-Doha in Merdrignac (C.-du-N.).

⁷⁶ The monastery is called Docunni in the B.L.D. 21 times, Sancti Docunni 3 times, Docguinni 10 times, Dochou once (the pagination on p. 395 of the Index to the B.L.D., where these names occur, has got a little mixed).

⁷⁷ *Vita Samsonis*, c. 45, 'monasterium quod Docco vocatur (6 MSS. read Doccovi, one Doccovus): Landohu (Pipe Roll 1185, Patent Roll 1300, Plympton charter 1302); Landohou (Bishop Brantingham's Register, 1383); in the first charter of Plympton Priory (early 12th century) Tohou; Lan-hoho (Quivil's Reg., 1283); Lannow since 1331. In 1400 (Stafford's Reg.) the parish is called Sancti Doquinni.

⁷⁸ Dr Robinson has here inserted, from H., the word *quia*, which is *not* in W. and entirely alters the meaning of the sentence.

It will be observed that in neither version is the meaning of the passage or its connexion with the previous sentence particularly clear, and it has caused considerable difficulty to everyone who has tried to explain it. Dr Robinson was puzzled by the word *revocabatur*, which, he says, is used 'apparently in the sense of "recalled to memory"', though this makes the whole sentence practically unintelligible. H boldly alters *revocabatur* into *vocabatur*, alters the *Britannigenas* in W into *Angligenas* (thereby flatly contradicting W), inserts the words 'Doccuinus, quasi *doctor*, apud Britannigenas vocabatur', and finally inserts *quia* after *immerito*, making the phrase that follows (which, as we have seen, is a quotation from the *Vita Cadoci*) into an explanation of the name *Doccuinus*. I think the simplest explanation of this difficult passage is to remember that, while H is a revision of W, W is itself (as we have seen) a revision of an earlier Life. The original author may have found a local tradition that, after founding Congresbury, the saint 'was recalled to Wales and preached in his native country'. This translation preserves the plain, obvious meaning of the word *revocabatur*, makes excellent sense, and is almost certainly a true statement of the actual facts. Cungar is a Welsh name (79), not a Byzantine name. The coast of Somerset was evangelized from South Wales; S. Petroc, S. Decuman, S. Carantóc, S. Dubricius, patrons of Somerset churches, are all Welsh saints, and their foundations in Somerset are daughter houses of Welsh monasteries, not *vice versa*. The author of W has later expanded this brief statement 'revocabatur apud Britannigenas' into the story of the saint's visit to Wales, contained in c. 13-16, which he has composed by making a series of plagiarisms from Lives of Welsh saints. The reader cannot fail to notice the difference between these last chapters and the first twelve. It is not merely that, as Dr Robinson pointed out, the trick of style which disfigures the earlier chapters has entirely disappeared. The concluding chapters are much longer than the earlier ones. I think we may assume that they are an addition to the original Life, which had been intended for lessons at matins. The writer, who shows in this section his familiarity with Welsh hagiography, may have introduced into the earlier part of the Life the quotations from the *Vita Illuti* and the *Vita Cadoci* which we have observed there. The final reviser, the author of H, while copying one of these quotations—that which contains the words '*doctrinae fluentia*', has conceived what seemed to him the brilliant idea that Cungar was the same person as the famous S. Docco, and by inserting the word *quia* endeavours to explain why the same saint should be called by two such different names. He has introduced this idea of his twice into the *De S. Cungaro*, in c. 6 and c. 16. In each case the statement, repeated in almost exactly the same words, that 'Cungar is also called Doccuin', has all the appearance of a clumsy insertion by a writer anxious to press a pet fancy of his own. In c. 16 the writer betrays himself—he has broken the thread of his narrative by the statement he has so unnecessarily introduced, and he has to pick it up again by the word *inquam*. The insertion must have been made about the year 1500, and not before, since the statement that Cungar and Docco are the same person (very important, if true) is not found in the analysis of the *De S. Cungaro* written on the margin of the copy of Higden's *Polychronicon* in the Library of Eton College (80) (formerly at Witham Charterhouse, but originally at Wells). It is certain that it is as false as the ridiculous reason (81) given for it by the

⁷⁹ Congar is from *con-car* = 'high friend'.

⁸⁰ See Dr Robinson, *J.T.S.*, January 1919, p. 105; Grosjean, *op. cit.* pp. 102-4.

⁸¹ Doccuin is, of course, a Celtic, not a Latin name. It is found on coins and inscriptions as Doca (York), Docca (Bâle), Doccae (Jublains), Doccius (London), Dixtuidoci Conbrinoci (Devon), Docirix (on numerous coins). See Holder, *Altceltischer Sprachschatz*, pp. 1296-9.

author of H. Cungar is called Cyngar, not Doccuin, 'among the Welsh'. The founder of Llandough is honoured in the kalendar in Vesp. A xiv on 15 February, *Sci. Dochowi presbiteri et conf* (82), and S. Cyngar's day is in November. Congar and Doccò are also honoured as separate persons in Cornwall, as well as in Wales.

Not much remains to be said about the materials the writer of W had at his disposal, and his method of dealing with them. He seems to have had only a very slender supply of local traditions about Congresbury (83), and none at all about the foundations ascribed to Congar in Wales. He and those who revised his work have had to expand it by inserting masses of padding, consisting of poorly-expressed commonplaces about the saint's virtues, abundant plagiarisms from other Lives of saints, and a few inventions, like the stories about the saint's youth. The idea of making him the son of an Emperor of Constantinople (84) was no doubt suggested by stories told in Somerset by crusaders who had stayed in Constantinople on their way to the Holy Land, and the *motif* of the pilgrimage to Jerusalem at the end of his career, characteristic of Lives of saints written at the end of the 11th and beginning of the 12th centuries (85), may be explained in the same way. Both cities were very much in the minds of people in Western Europe at this period. The writer's knowledge of these distant lands was, however, vague, as his mistake about the situation of the Tyrrhene Sea shows. Another invention is the description of the saint's bringing the land round Congresbury under cultivation, and it is characteristic of the writer's inferior literary powers that he should fail to see how ridiculous it is to expect us to believe that so simple a thing as the reclamation of a fen could be regarded as a miracle, the news of which spreads throughout England and Wales and causes universal wonder. Ina and Edgar are of course two of the chief figures in every history of Somerset. Our author could not be ignorant of their names. The story of the death of Edgar presents a special difficulty. We have seen that there are reasons for supposing that the same hand may have retouched the *Vita Iltuti* and the *De S. Cungaro*. Now both these Lives have a story of King Edgar having died as a punishment for having violated the saint's sanctuary, Iltut's in one case, Cungar's in the other, in each case after nine days. The most credulous person could not help seeing that both stories could not be true, and it seems impossible that both can be by the same writer. Moreover Edgar was regarded at Glastonbury as a saint, and there is a Life of him, which of course contains nothing resembling these stories, in the collection of Somerset Lives, published in 1516, which includes H. The *motif* of a person who has incurred the wrath of someone possessed of supernatural powers dying after nine days proves to be not uncommon in Celtic folklore. Fr. Grosjean (86) quotes an instance of it from an early Irish tale. Edgar died young. We are not told the cause of his death, but he is said to have been buried at Glastonbury. It is just possible that there may

⁸² The entry is an early addition to the ms.

⁸³ The story of the boar is probably not a Congresbury legend, but simply imitated from the *Vita Cadoci*. Similar stories are very common in Celtic Hagiography, cf. my *Saint Dubricius* (1944), p. 22.

⁸⁴ This seems the simplest explanation. The authors of *Lives of the British Saints* (II, pp. 248, 9), relying on genealogies in late documents (including the worthless Iolo mss.) call him Cyngar ab Geraint and make him the uncle of S. Constantine. Some have tried to make Constantinople in the *De S. Congaro* mean this Cornish king's land, but it seems rather far-fetched. For Luciria Fr. Grosjean suggests a Welsh name like Goleuddydd, from *goleudd* = 'light', which may have been known to the writer (ib., op. cit. p. 113).

⁸⁵ e.g. the Lives of SS. Budoc, Cadoc, Cybi, Petroc, David, Teilo, Patern and Tudual.

⁸⁶ op. cit. p. 101, note 3.

have been legends attempting to account for his untimely end. The stories of the death of Edgar in the *Vita Iltuti* and the *De S. Congaro* seem in any case to have been influenced by two similar stories in chapters 12 and 13 of the *Vita Gundlei*. In c. 12 the pirates from the Orkneys, who have broken into and robbed S. Gwynllyw's church at Newport, are pursued by a 'terrible horseman (*virum terribilem*), night and day', who is 'Saint Gwynllyw, sent from heaven to punish them for their sacrilege', and who causes the wreck of their fleet. This figure reminds us of the *terribilis miles*, who, in the *Vita Iltuti*, appears to Edgar and pierces his breast with a lance, after the sack of Llantwit. In c. 13 of the *Vita Gundlei* Harold is described as having violated Newport church and being punished for so doing by his death in the battle of Hastings next month (the writer's chronology is defective). There is a close resemblance between the details of this latter story and those of the story of Edgar's offence in the *De S. Congaro*. Harold, like Edgar, repents of what he has done, makes offerings to S. Gwynllyw's altar, returns home full of forboding and dies soon after. Like Edgar in the *V.I.*, Harold restores what he has robbed. It will be remembered (87) that Caradoc of Nantcarvan has used this very theme of 'pirates from Orkney' raiding the Severn in his *Vita Gildae*. M. Ferdinand Lot (88) has pointed out that the latter 'is not really a hagiographical document but a work of fiction intended to enhance the glory of the Abbey of Glastonbury by claiming for it the possession of the relics of the chief British scholar'. Thus it is just possible that a writer with so little historic sense may have composed two different stories of the death of Edgar, both equally fantastic. The *motif* of the danger of inquisitive glances at a sanctuary may have been imitated by him from the well-known story in Nennius of S. Iltut's cave in Gower (89).

The story of the saint's crossing to Wales contains several more loans from the *Vita Iltuti*, among them being the mention of *Glatmorcantia* and the river Tam (now the Thaw). The latter appears several times in Welsh hagiography of this period. The story of the *arduus mons* and the statement that it was 'at least a stadium from the shore' leads us to enquire whether the author had a definite place in his mind. It is possible that the story of the two sites chosen for a monastery, each of them described as an *arduus mons*, may be an insertion by the same hand which introduced the statements in chapters 6 and 16 that Cungar is the same person as Docco, and that the two Llandoughs may be intended. It is noticeable that the story, as we have it, is told in a very confused way, 'venit ad arduum montem' being quickly followed by 'pervenit ad arduum montem'—without any attempt to explain that they are different places. And neither Llandough is exactly an *arduus mons*. But in any case the writer carefully avoids naming either of Cungar's Welsh foundations.

Everything in this last section, except the conclusion, is either an invention or a reminiscence from the Life of some Welsh saint. The name of King Poulentus is borrowed from the *Vita Iltuti* (c. 2 and 3) and so is the *motif* of Cungar's arousing the wrath of a king by building a hermitage without permission (*V.I.*, c. 8). The blinding of the king (*De obcecatione Poulenti regis*) is imitated from the *Vita Cadoci* (c. 65. *De obcecatione Malguni regis*). The name Pebiau is borrowed from the *Vita Dubricii* in the Book of Llandaff (90), though the story in which he figures has been invented as a warning to Norman and Angevin kings who persist in retaining in their hands the Church's

⁸⁷ See p. 87, note 71.

⁸⁸ *Mélanges Bret.*, 1907, p. 267.

⁸⁹ *Hist. Britt.*, § 71.

⁹⁰ *B.L.D.*, p. 78, 'Quidam rex fuit Ercychi regionis, Pepiau nomine', see Doble, *S. Dubricius*, 1944, pp. 12, 13, 25.

property at Congresbury. The phrase *ad modum cere ad ignis ardorem liquescentis*, describing the punishment Pebiau suffers, appears first in the *Vita Cadoci* (91), from which the authors of the Book of Llandaff (92) and the Life of S. Iltut (93), like the writer of the Life of S. Cungar, have all in turn appropriated it. The introduction of 'Dubricius, Bishop of Llandaff', as giving the saint permission to go on pilgrimage, is suggested by the *Vita Iltuti* (94), the *Vita Tathei*, and the *Vita Gundlei* (95). The writer forgets that he had made Cungar a contemporary of King Ina, who lived 200 years after the time of S. Dubricius. We observe that the 'parishioners of the neighbouring churches' are mentioned as also giving their consent. The *parochiani* of Llantwit are referred to in the *Vita Iltuti*, though in the Book of Llandaff *parochia* still has its old meaning of 'diocese'. It is not clear why our author should think their consent necessary to an abbot's going on pilgrimage.

I think it will now be clear to every reader how useless it would be to look to this Life of S. Cungar for any information about the saint. It is a curious literary problem, throwing light on the activities of Welsh hagiographers in the 12th century, but that is all. The *De S. Congaro* is very definitely a piece of propaganda in the interests of the Church of Wells. As Mr Baring-Gould and Dr Fisher (96) point out, the writer has had to 'make bricks without straw'. Instead of having, like the authors of the Life of S. Iltut and of the Life of S. Cadoc, an abundant supply of local traditions at his disposal, the writer has been obliged to make up a story out of his own head. Hence it is all so vague, full of pious remarks and epithets, conventionally applied, and unlikely and unconvincing assertions, and a very large number of passages copied or imitated from other Lives, like the 'composition' of a child at school, who knows nothing of the person he is told to write about, but has to put down something. The writers of the Lives of two other Somerset saints, S. Decuman and S. Nectan, were equally handicapped by the fact that practically nothing but the names of the heroes had been preserved at the churches founded by them, but their literary powers were very much superior. In the case of S. Congar the famous saying of the late M. Joseph Loth is particularly appropriate: 'In Wales, Cornwall and Brittany it is not the Lives of the saints that tell us most about the existence of the saints and the national organization of Religion, but the names of places'. The study of the geography of the cult of S. Congar will give us, I hope, what we have failed to find in his Life.

Some time ago the present writer was asked what were the main results of recent research into the hagiography of Wales and Cornwall. I think we can say that one of them certainly is the discovery that Somerset was evangelized from South Wales in the 5th and 6th centuries—it is a fact that you will not find mentioned in any History of England. The coast of Somerset is covered with dedications to Welsh saints (97), though in most cases the main centres of their cult are not in Somerset, showing that

⁹¹ c. 37.

⁹² B.L.D., p. 116.

⁹³ c. 17.

⁹⁴ c. 7.

⁹⁵ c. 5 and c. 10. In c. 5 S. Gwynllyw builds his monastery 'concessione Dubricii, Landavensis episcopi'.

⁹⁶ *Lives of the British Saints*, II, 249.

⁹⁷ The same is true of Devon. Asser mentions a place called Arx Cynuit, which the English Place-name Society (*Devon*, pp. 62, 3) identify with Countisbury in North Devon. There was an Alt Cynuit in Glamorgan (*Vita Cadoci*, c. 46) apparently the modern Llangynwyd.

the movement arose in Wales and spread southward across the Severn Sea, and not *vice versa*. The *De S. Cungaro* thus exactly reverses the saint's itinerary. Culbone is dedicated to the S. Coulban of Brittany, Porlock to S. Dubricius, Watchet to S. Decuman, Timberscombe to S. Petroc, Carhampton to S. Carantoc, the lost Lantokai in Street to S. Kea, a chapel in Cheddar to S. Nectan, while S. Cadoc was honoured at Steep Holm. It will be observed that most of the places I have referred to have churches dedicated to Celtic saints, while their names are secular names. But in the case of Congresbury and in this case almost alone (98), we have a place called after a Celtic saint, and claiming, at least from the beginning of the 11th century, to possess his body. Our survey of the cult of S. Congar has shown us that he is a pan-Celtic saint. A more extensive examination of his cult in Cornwall and Brittany will enable us to go further and obtain more precise knowledge of the missionary movement originating in Wales. In my 'S. Cadoc in Cornwall and Brittany' I have pointed out that a group of churches dedicated to saints from Glamorgan (S. Petroc, S. Cadoc, S. Maugan, S. Hernin) is found in mid-Cornwall and again in a remote part of Brittany—in the valley of the Oust near Redon, where there is a parish of St-Perreux (St-Perreuc 1398), with a chapel of St. Méen (Mewan) close by, St. Congard (99) and Pleucadeuc side by side, with two places called after St. Maugan in the latter parish, further up the stream, and Pluherlin (Plebs Hernim in 836) to the south (100). The reader will now see the special significance of the situation of St. Ingonger, in Lanivet, two miles from the great centre of the cult of S. Petroc, the chief of the Cornish saints, at Bodmin Priory. S. Petroc is associated with S. Cadoc in Welsh hagiography. Petroc was the uncle of Cadoc, and the *Vita Cadoci* begins with a story about him, mentioning the observance of his festival on 4 June at Bodmin. Now Lanivet is not far from the famous Chapel and Holy Well of S. Cadoc in the parish of Padstow, and there is actually in the parish of Lanivet a place now called Bokiddick, but in 1284 Bodcadec, side by side with St. Ingonger—only separated from it by the hill. The late M. Sébillot found in the valley of the Oust a local legend, which he printed under the title of 'The Seven Saints', in his *Petite Légende Dorée de la Haute Bretagne* (101). It relates how seven brothers were brought into the world at one birth by a queen of Ireland. The Queen ordered one of her women to drown them. The king discovered what she had tried to do, before it was too late, and, though very angry, spared her and had the children handed over to nurses. When the boys were grown up,

⁹⁸ Culbone, Lantokai and Kewstoke are exceptions. It is curious that in Cornwall S. Docco and S. Kigwa were both honoured in the same parish, now called St. Kew. S. Kywa is in the Exeter Martyrology on 8 February and on the same day in the Welsh kalendar in Vesp. A. xiv (as Kigwa).

⁹⁹ Sanctus Conguarus 1387, Saint-Congar 1422, Saint-Gongar 1668. The church has been rebuilt, but Rosenzweig (*Rep. Arch. du Morbihan*, 215) says that there is a low rounded *lec'h* in the churchyard wall, and a fine menhir near the Bois de Misny. Till the 12th century the parish formed part of that of Pleucadeuc. The statement in *Lives of the British Saints*, II, 253, that at the Pardon 'women get taken with a convulsive affection and bark like dogs' is not quite correct. Women afflicted in this way come to the Pardon at the Chapel of N. D. de Quimpé (Keramper) in the parish on Whit Monday, hoping to be cured. (Le Mené, *Paroisses du diocèse de Vannes* II, 364-8).

¹⁰⁰ Lan-herne adjoins Mawgan Church, near Newquay in Cornwall. St.-Congard, Pleucadeuc and Pluherlin touch each other. For Pleucadeuc see Doble, *S. Cadoc in Brittany*, pp. 25-9. These churches must all have been founded from the very ancient abbey of Balon close by, connected with Dol (destroyed in the 9th century).

¹⁰¹ Nantes, 1897, pp. 146-51.

they all embarked for Brittany, and became monks or hermits. One of them was called S. Perreux and another S. Congard. This typical topographic legend contains a folklore theme found in Wales (102). It may contain a dim reminiscence of a historical fact, that S. Petroc and S. Congar, together with S. Cadoc, were 'brothers' in a great missionary enterprise. All three are honoured in Somerset, as well as near Bodmin and near Redon, clearly because they joined in the evangelization of that part of Dumnonia before going on to Cornwall and Brittany.

But I think we can carry our discoveries in the field of these long-forgotten events still one stage further. The *Vita Nectani* contains a list of the 'Children of Brychan' in Devon and Cornwall, which includes the names of Nectan, John, Mabon, Tedda and Cleder. The first is the patron of Hartland and several chapels in Cornwall; the second is the eponym of Instow in Devon; the others of St. Mabyn, St. Teath and St. Clether (103). These names are also found in Brittany. Now it is very remarkable that one of the dedications to S. Congar in Brittany is at Lan-déda, which seems to mean 'The Lan of Tedda', the T being mutated, as usual, to D after *Lan* (104). A little to the east of Landéda is Cleder (of which the Glastonbury St. Ké is the patron saint). Now we have seen that there is a Tregunger (Tregonger 1666) in the parish of St. Clether in Cornwall. Between Landéda and Cleder is a place called Kermabon, while in the parish of Lanivet in Cornwall is a farm called Tremabyn (in 1327 Tremaban). Near Morlaix is the parish of Ploujean, which contains a Coet-Congar and a Roscongar. Melgven (see p. 33) is near Nizon, which is the Breton form of Nectan. Plouhinec, which contains Lescongar, is dedicated to S. Winnoc, and in Lanivet parish is a place called Bodwannick (in 1274 Bodwynek = 'The dwelling of Winnoc').

The study of the cult of the eponym of Congresbury promises therefore to provide a most valuable clue to the early history of Somerset, linking the information afforded us of its condition in prehistoric times by the excavation of its lake-villages with its first mention in documents as part of the West-Saxon kingdom, and shows how important is the scientific pursuit of hagiography, combined with that of toponymy, in the work of re-constructing the lost history of the making of England.

CARADOC OF NANTCARVAN'S *Life of S. Cadoc*

A new discovery has just produced fresh evidence for the revision of Welsh Lives of saints by Caradoc of Nantcarvan, see p. 87, n. 72. By great good fortune I was able a few weeks ago to get into touch with Fr. Grosjean, the Bollandist, who sent me copies of the three numbers of *Analecta Bollandiana* which he has been allowed to publish during the German occupation of Belgium. All three deal with the recently discovered Gotha MS, and one of them (tome LX, 1942) consists of a critical edition of the *Vita Cadoci* contained in that MS. It was previously entirely unknown, and proves to be a revision of Lifris's *Vita Cadoci* by Caradoc of Nantcarvan, who signs it at the end with the same pair of hexameters with which he concludes his *Vita Gildae*:

'Nanskarbanensis dictamina sunt Caradoci,

• Qui legat, emendet: placet illud compositori'.

¹⁰² *Lib. Land*, p. 128.

¹⁰³ Referred to in the *Life of the Pembrokeshire S. Brynach* (C.B.S. p. 9).

¹⁰⁴ Mr R. Morton Nance says, 'I quite agree with your identification of Landéda as "Lan of Tedda"; the vowel seems to have been lengthened, but that is not impossible. The base of the name is evidently *Teth*, which Loth would compare with Welsh *taith*, journey. If so, the vowel should be originally long, and the Cornish spelling Teath suggests *teth*.'

SAINT CONGAR

It contains several striking parallels with both the *Vita Iltuti* and the *Vita Congari*. Thus the theme and the wording of c. 1 in the latter Life reappear in Caradoc's *Vita Cadoci*, c. 25. The story itself is found in Lifris's *Vita Cadoci*, c. 11, but in rewriting it Caradoc has used the phrases 'De sterilitate regine *expulsa*' and '*expelleret suam sterilitatem*', which are not in Lifris, and he places the queen's country (not specified by Lifris) in an island on the *Tirrhene sea* (cf. *Vita Cong.* c. 3 and c. 6). The words *De familia regis Poulenti, quam terra deglutivit* in the heading to c. 3 in the *Vita Iltuti* form part of the heading to c. 12 in Caradoc's *Vita Cadoci*, and the heading to c. 9 in the former Life contains a close verbal resemblance to that of c. 4 in the latter. The *subulcus regis Poulenti* appears in c. 9 of Caradoc's *Vita Cadoci* and in c. 15 of the *Vita Congari*, but the story is varied by the king (as we should expect) being blinded in the latter Life, and his 'subulcus' in the former. Fr. Grosjean points out how the expression *estuali estu fervente* of Caradoc's Life of S. Cadoc (where *estivalis* would have been more natural) (c. 19) recalls the '*pro fervore estuali*' of the *Vita Congari* (c. 10): 'le rare mot *estualis* appartient à son vocabulaire'.

This new *Vita Cadoci* is as well written as the *Vita Iltuti*, and, though it contains some of the tricks of style characteristic of Caradoc, they are barely noticeable.



Origins of Civilization in the Afrasian Dry Zone

by T. K. PENNIMAN

CHANHU-DARO EXCAVATIONS, 1935-6. By Ernest J. H. Mackay. American Oriental Series, vol. 20. American Oriental Society, New Haven, Connecticut, 1943. \$6.00 (£1 13s 6d).

WHILE Europe and the Far East were still in the Mesolithic stage of hunting and gathering, the peoples of Western Asia and Egypt began to give up this wandering life, and to settle in communities, sowing seeds and reaping the harvest, domesticating animals for food and traction, and invented the plough and wheel, metallurgy, textiles, pottery wheel-made and kiln-fired, orchestral music, and writing. This complex represents the greatest revolution and the most important that humanity has ever seen, or will see. Every material thing invented since could disappear from the world, and the good life would still be possible. This was a revolution that turned mankind from wandering on the face of the earth to a home and an abiding place, and on it the whole superstructure of civilization depends.

In reviewing Ernest Mackay's *Chanhu-daro Excavations*—the latest, and to universal regret, the last work of this great archaeologist—it seems appropriate to recall how considerable a part he played in revealing the history of civilization in the vast dry-zone stretching from the Nile to the Indus Valley, and how much his experience of the archaeology and ethnology of three great river valleys, the Nile, the Tigris-Euphrates, and Indus, as well as of Palestine, fitted him for comparative and analytic study, so that in addition to intensive reports on the sites of which he was Field Director, he has made contributions to the correlation of the sites and periods and to the interpretation of much that would otherwise be obscure.

Let it be said at once that in this as in all his field work, the method of recording leaves nothing to be desired. It is a method devised by General Pitt Rivers in the last century for recording his own excavations, and one too often neglected, which makes certain that an archaeologist a hundred years hence, or even a thousand, can reconstruct the entire excavation, and thus re-interpret in the light of new knowledge for all time. Mackay's plans, stratifications, system of numbering, catalogue, and illustrations of everything, including in this volume thirty plates of line-drawings by Mrs Mackay;⁽¹⁾ and three plates in colour of Harappa and Jhukar pottery by Mrs N. de Garis Davies and Miss Suzanne E. Chapman, provide all material evidence in a form that can be fully used by others, and whatever superstructure may be built in the future, and perhaps demolished in the light of further evidence, the foundation will always stand firm.

This last volume crowns a life-work that began in Egypt in 1905, when Mackay was an assistant to Sir Flinders Petrie, the father of Egyptian archaeology, and during his time there he published with Petrie and Wainwright *Medum and Memphis* in 1910, *The Labyrinth, Gerzeh and Mazhuneh* in 1912, and *Heliopolis, Kafr Ammar and Shurafa*

¹ Mrs Mackay has worked with her husband during a great part of his career, and much of the accurate cataloguing and many of the line drawings in his publications are her work, in addition to much help in the administration of the various camps where they excavated.

in 1915. In intervals of service during the last war he was in charge at Luxor, and at work on Allenby's International Commission to tour and list sites of archaeological importance for preservation, protection, and scientific excavation, and in 1919 became Custodian of Antiquities for the Government of Palestine, one result of which was the publication with Father Vincent in 1923 of *Hébron, Le Haram El-Khalil*. During the years between 1922 and 1926 he was Field Director of the Oxford University and Field Museum Expedition to Kish in Mesopotamia, and three volumes were published by the Field Museum of Chicago, in 1925 and 1929 the *Report on the 'A' Cemetery at Kish* and the *Sumerian Palace and 'A' Cemetery* of the latest Sumerian dynasties, and in 1931 the *Report on Excavations at Jemdet Nasr, Iraq*, an important site which he discovered in 1925, and which has given its name to the last of the three great pre-dynastic periods of Mesopotamian archaeology. From 1926 until 1932 he was in charge of the excavations of the Archaeological Survey of India at Mohenjo-daro in the Indus Valley, finding time at intervals to publish with Lankester, Harding, and Petrie, work on the tumuli on the Bahrein Islands in the Persian Gulf under the title *Bahrein and Hemamieh* in 1929. Thirteen chapters of the first great report in 1931 on *Mohenjo-Daro and the Indus Civilization* were by him, and Sir John Marshall and others contributed the remainder. A smaller and easily read book entitled *The Indus Civilization* appeared in 1935. Later, in 1938, he published two other volumes on *Further Excavations at Mohenjo-daro*. His last work was done at Chanhudaro for the American School of Indic and Iranian Studies and the Boston Museum of Fine Arts, and the result is now published in the book under review.

In all of this work, he shews the utmost integrity in reporting, and in such a way that the work can always be used for its well-attested facts, and seldom speculates, but on occasion gives certain facts from other of the many sites with which he had first-hand acquaintance to afford a correlation between sites, or to suggest a chronology. In many of his numerous articles, however, in *ANTIQUITY*, the *Journal of Egyptian Archaeology*, the *Journal of the Royal Asiatic Society*, *Man* and the *Reports of the Smithsonian Institution*, he has devoted considerable attention to the correlations between sites and periods, especially between Sumer and Sind, with all the authority of intensive knowledge of each area, and has played no small part in developing the picture of the ancient world which is now emerging.

It was in 1929 that we at Kish, Woolley at Ur of the Chaldees, and Jordan at Warka, the Uruk of the Sumerians, the Erech of the Bible, all reached virgin soil, ourselves after digging through 60 feet of buried civilizations, and passing downward through more than 5000 years of history. Thus for the first time we were in a position to establish the main succession of events from the beginning of civilization in the valley of the Two Rivers, the Tigris and Euphrates. The pre-Sargonid order was clear: the close of the Sumerian dynastic about 2450 B.C. in Mackay's 'A' Palace, the earlier Sumerian dynasties beginning about 3000 B.C., Mackay's Jemdet Nasr pre-dynastic with its polychrome pottery and the semi-pictographic tablets published by Langdon, flourishing about 3200 B.C., then Jordan's polished red, grey, and black Uruk ware with pictographic tablets, about 3500, and finally Woolley's 'Ubaid monochrome painted ware with no writing, but with copper used as well as stone, about 3800.

In the most ancient settlements, built on the alluvium brought down from the mountains by these rivers, we find the essentials of civilization already established in the first half of the 4th millennium B.C., in short a Chalcolithic age in which copper was used as well as stone for tools and ornaments. To go back farther in time, we must examine the more northerly settlements, founded while Mesopotamia was still below the waters

of the Persian Gulf. Such sites as Schaeffer's Ras Shamra, Garstang's Jericho, Oppenheim's Tell Halaf, all in Syria or Palestine, Ghirshman's Sialk in Persia, Pumpelly's Anau in Turkestan, Caton-Thompson's Neolithic Fayum in Egypt, take the story back to the beginning of the 5th millennium, in which we find cultivation of the ground, domestic animals, pottery, and textiles, but no metal. Then at Jericho, Garstang (2) discovered, below a Neolithic floor with grain-bins, the Mesolithic economy of hunting and gathering, undoubted Natufian implements including sickles which may have been used for reaping wild seeds, or perhaps for cultivated grain. These Natufian implements, which may be dated between the 6th and 5th millennium, were found by Professor Garrod at Mount Carmel above an unbroken succession of Palaeolithic periods. Thus the Near East has furnished a complete skeleton outline of the early history of Mankind, of the uncivilized men who invented civilization.

During the years that Mackay was working on the site of Mohenjo-daro in Sind, he kept in close touch with the work on the great sites in Mesopotamia, and readers of ANTIQUITY will have available his 'Further Links between Ancient Sind, Sumer and Elsewhere' published in 1931 shortly before the appearance of *Mohenjo-daro and the Indus Civilization*, in which he had also drawn comparisons. In his latest work on the *Chanhu-daro Excavations* the succession of periods and their correlation with those elsewhere becomes clearer.

In this work he has given up the general title of Indus Valley Civilization, and substituted the names of periods taken from sites where their characters were first determined, mainly by the gifted Indian Archaeologist Dr N. G. Majumdar, whose explorations in Sind were unhappily ended by his death at the hands of bandits who murdered him for the diggers' wages.

The principal period at Chanhu-daro is the Harappa, which is represented by four occupations, with good brick buildings, and excellent sanitary and drainage arrangements. These people made beautiful red pottery on the wheel, with bird and foliage designs in purple-black line, and fired it in a kiln. They had factories for the making of beads and ornaments, and worked in copper and bronze. At the time of publication, the metal tools and ornaments had not been analysed, but the analyses published by Desch in *Mohenjo-daro*, as well as analyses which he published of Sumerian metal in the Reports of the British Association from 1928 to 1935, appear to shew so haphazard a mixture of alloy with the copper that one must believe that they were not mixed in definite proportions and with set purpose, but that the alloy depended entirely on the natural mixtures available to them at any given time. As would be expected, we find that flint or chert knives were commonly used for ordinary work. Here, as all through the early Sumerian dynasties, stone and copper were used together. When mixtures of bronze are fortuitous, its unreliable nature will demand supplementing by stone for ordinary rough work, as the flint factories at Kish attested, and we find in fact that a Chalcolithic period, i.e. one in which both copper and stone tools are used, lasts from about the 40th to the 16th century B.C., from which time in, for example the 18th Dynasty in Egypt, (3) we find tin and copper mixed with set purpose and in definite proportions, and with this new reliability, the use of stone in the centres of civilization begins to disappear, and a true Bronze Age begins. As at Mohenjo-daro, the stamp seals or seal-amulets with animal figures, and a script that has not yet been read, were found associated with this period, which from objects found in Kish and Ur, such as the Indus Valley seals and

² Liverpool *Ann. Arch. and Anthr.* XXII.

³ See Wainwright, ANTIQUITY, June 1943.

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etched cornelian beads, we may make roughly contemporary with the Sumerian Dynastic, i.e. between 3000 and 2450.

An earlier period, the Amri, named from a site where Majumdar found it underlying Harappa pottery, is not represented at Chanhudaro, though it might exist deep below the water-table. Its painted pottery and its position suggest that it is contemporary with the late pre-dynastic Sumerian.

One especially valuable result of the excavation was that it helped to fill the long gap that has hitherto existed between the end of the Harappa period and the arrival of the Aryans, probably round about 1500 B.C. The Jhukar and Jhangar cultures had been noted by Majumdar in different places, but here they were found in stratified order, the Jhukar above the Harappa, and the Jhangar above the Jhukar.

The Jhukar people appear to have been the immediate successors of the Harappa people, even using some of the Harappa material for their building. Their pottery, beautifully illustrated in colour by Mrs de Garis Davies and Miss Chapman, is totally different in texture and decoration from the red Harappa pottery with its naturalistic line decoration in purple-black. This Jhukar pottery is usually painted in two colours, red and black, often on a buff slip, and the designs are for the most part geometric. The fabric is coarser and the firing is inferior to that of Harappa work. Their seal amulets with geometric designs, generally roughly executed, are quite different from the well-made animal designs on the Harappa seals. No trace of writing, a characteristic of the Harappa seals, appears on the Jhukar examples.

The Jhangar occupation appears to be that of a small group of people of no great wealth who came after the mounds were deserted. Their pottery seems to have been made on a tournette or slow wheel, and to have been baked in an open furnace. It is well made, of grey paste, often almost black, polished, and tastefully decorated with incised triangles, chevrons, and zigzags.

While the book has a wealth of detail on how people lived, little was found to shew what kind of people they were. The report on the one skull of the Harappa period by Krogman and Sassaman shews it to be a female of Mediterranean type. This was to be expected. The Mohenjo-daro (*Mohenjo-daro* 1931) types were Mediterranean, Alpine, Mongoloid and Dravidian; our types at Kish (4) were Eurafican, Mediterranean, and Armenoid. All over this area we appear to be finding a mixture of the same races that help us to excavate to-day.

Among other special reports, attention should be called to a valuable study of the weights and scales of Chanhudaro made by A. S. Hemmy and Ardelia Ripley Hall.

In conclusion, this book, splendidly published by the American Oriental Society with the help of the American Council of Learned Societies, is a fitting memorial to an archaeologist of great ability and unique experience. Civilization in the Old World began in four great river valleys, the Nile, the Tigris-Euphrates, the Indus, and the Yellow River Valley—in this last about 2000 years after it first appeared in the Near East. Ernest Mackay was in charge of major excavations in three of these great river-valleys and made major discoveries in them. He began his career in a time when all was uncertain; he lived to see the main order of events in the early development of civilization in ordered sequence, and he himself did much to bring about that order.

⁴ Penniman, *Kish* IV; Buxton and Rice, *Journ. Roy. Anthr. Inst.*, vol. 61.

Notes and News

ARCHAEOLOGY IN SOUTH AFRICA

We have received a circular announcing the formation of a Cape Archaeological Society whose headquarters are at Cape Town, with 'local satellite bodies at such places as Kimberley, Grahamstown, Port Elizabeth, Mossel Bay, etc., each with its own committee and with considerable freedom of action'. The Society has an ambitious programme of work and publication. Further information can be obtained from the Secretary, Cape Archaeological Society, Sherwood, Sherwood Avenue, Kenilworth, Cape Province.

We welcome the new Society and hope it will be well supported. There is ample scope for such bodies, and always will be, even though the archaeological operations of the State should expand, as we hope they will. For such operations are conditioned, like those of an army, by its intelligence service. The State cannot intervene to protect its ancient monuments from destruction, or chance finds from being lost to science, unless it is informed in time; and the members of an archaeological society can often provide such information. Even without calling in State aid they can often, by persuasion, save valuable evidence from destruction, for much of it is destroyed in ignorance, and the destroyers are generally quite reasonable people if properly handled. How often in England has an ancient site been spared by farmers and industrialists because they remember that 'the Archaeological Society', or perhaps some local antiquary, is known to have visited the place and be interested in it! Such scientific good manners may be displayed even by persons who are not themselves at all interested in the particular subject.

Preservation is, of course, the prime duty of archaeologists, whose raw material of study is irreplaceable, unique and rapidly dwindling. But hardly less important is record, in plans, pictures and words; for in spite of all that may be done, it is certain that much evidence will nevertheless be destroyed. We know that only too well in Europe; but we know also that the Town Surveyor can be almost as destructive as the bomb, though of course he has less scope in a new country. The accumulation, therefore, of every kind of illustrative and descriptive record is of paramount importance.

The first of the series of Handbooks which the Society proposes to produce is one on Method in Archaeology. That is not only logically correct but may also ensure the survival of techniques if they are lost in Europe during the new Dark Age. (It seems unlikely that a hungry and houseless continent will have the leisure or desire to investigate earlier ruins). During the last few decades archaeological technique has developed very rapidly in Europe and particularly in England, where our contribution in the field and air has counterbalanced the museum development abroad, in which we lag far behind. Technique is the very fabric of culture and (unlike it) can be exported. We may not have contributed much recently to the techniques of cookery, hotel-keeping or the arts, but in certain departments of scientific research we are ahead of other countries. In archaeology, for instance, we have developed field-work, air-photography and some aspects of excavation and preservation most successfully; and, if only for purposes of propaganda, we should export our best lines. But we cannot do so as long as we are in the grip of a system that is blind to all except money values. It must be left, therefore, for the new countries to take up the story and carry on the tradition till better times return to the former homes of civilization. O.G.S.C.

THE PROTECTION OF ARCHIVES IN ITALY*

Many people must have wondered with a pang, when the fighting reached Sicily, what would happen to the more famous Italian Archives—to the Records of the Medici at Florence or the Norman Kings in Naples and Palermo. For the Archivist, equally concerned with all writings accumulated during the transaction of business or conduct of affairs of any kind, ancient, modern or contemporary, the danger was a double one ; and considerable fear was expressed lest the chances of war should lead to destruction and dispersals which would not only mean irreparable loss to the cultural riches of the world but would impede seriously the work of civil reorganization. The War Office accordingly invited the Secretary of the Public Record Office, by permission of the Master of the Rolls, to visit Italy under the auspices of the Allied Control Commission and organize protective measures in concert with the Monuments and Fine Arts section of that Commission : and this was effected during the early months of 1944.

The subsequent posting of two other members of the Record Office staff, seconded from the armed forces to the Monuments section of the Commission, made it possible immediately before the entry into Rome, and afterwards, to keep an Archives' specialist in close touch with each of the advancing armies. It was not possible until later to add a representative from Washington, but a visit from the Director of the President's Library at Hyde Park has kept American Archivists in touch with the situation and ensured co-operation.

The task of protection involved, as a first measure, the preparation of a List covering, specifically or by inference, all classes both lay and ecclesiastical, of Italian Archives ; and its issue with suitable instructions as completely and as widely as the organization of Army and Commission made practicable. The Archives to be covered were rich, numerous and highly organized. Besides the *Archivio del Regno* and over 40 *Archivi di Stato* (most of them rich in series inherited from the Kingdoms, Lordships and Republics of earlier periods) there are over 800 townships having ancient Archives ; Dioceses and Chapters show a comparable wealth ; Notarial Archives add more than 100 large and numerous small Repositories to the total ; and modern legislation has created in the District Offices of Land and other Registration (the *Catasto*, and so forth), of the Law, Taxation and the *Stato Civile*, and of the ordinary Local Authorities in Province, *Compartimento* and Commune, well regulated Archive Centres of real importance ; and then there are the Private accumulations.

It was not difficult to predict the dangers which threatened accumulations so numerous, so scattered, and so susceptible ; nor has the prediction lacked confirmation by the event. On the other hand there is some ground for relief. Deliberate destruction by the enemy, such as that of the Angevin Archives at Naples, burned senselessly and without excuse in September 1943, has been (it is only just to say) comparatively small up to date : nor have large quantities been carried off ; though some obviously beautiful or valuable things, such as the painted binding-boards (the *Tavolette di Biccherina*) at Siena, have had narrow escapes. The modern Archives of Ministries at Rome have naturally been largely evacuated either by the Germans or by Fascist co-operators, but what remained included some surprises ; from the vast *Archivio Ordinario* of Mussolini, found in order and *in situ*, to the Air Ministry documents discovered at the bottom of a well. The larger modern local Archives seem also, up to date, comparatively immune from destruction, though frequently in great confusion.

* Partly printed in THE TIMES, 3 January 1945, and now reprinted by permission with certain additions not included in THE TIMES report. Mr Jenkinson also broadcast the results of his visit.

Of damage from bomb and shell there is a long and sad tale, though a policy of evacuation has probably saved much, as at Livorno and Pisa. Total or considerable destruction in the *Archivi di Stato* at Foggia, Pizzofalcone and Pistoia, in Cathedral Archives at Benevento and elsewhere, in the *Archivio Notarile* at Frosinone, in the Parochial Churches destroyed at Naples—these are some examples of the price we pay for air support and artillery preparation, by whichever side they are practised. It is perhaps more profitable to dwell on what has had the fortune to survive or escape bombardment. Sicilian Archives have emerged comparatively undamaged, and so have *Archivi di Stato* in Southern Italy other than those mentioned; and at Foggia the valuable *Archivi della Dogana delle Pecore* survived a direct hit; the priceless *Archivio di Stato* at Florence, after being in great danger, escaped with negligible damage to the Documents; at Rome, Orvieto, Perugia, Assisi, Lucca, Arezzo, Siena and, most recently, Ravenna it has been possible to report all Archives safe. Moreover, where there has not been fire, demolition of a building has not always meant destruction of its contents. Archives are in some ways singularly resistant, and manuscripts exhumed intact from the ruins of the *Colombaria* at Florence, the *Archivi di Stato* at Pistoia and the *Biblioteca Comunale* at Tivoli, may suggest hopes for the *Archivio Comunale* at Viterbo, for Cathedral Archives at Livorno and even for the *tertia aula* of Archives (the rest had gone to Rome) buried under the rubble at Monté Cassino.

The period of active hostilities past, come the dangers from civil population and occupying troops. Looting by civilians is always liable to occur, as it did at Palermo, before civil government is restored and while custodians are scattered and doors and windows missing; and where there is not looting there may be indiscriminate destruction, when an uneasy consciousness that Records contain names (especially the Records of the Police or the Taxgatherer) suggests the remedy of fire. We have perhaps to thank the severity of an apposite clause in the Italian penal code for the fact that occasions of this sort seem to have been so far comparatively few. Occupying troops may do much damage, if not by destruction by dispersal (which is nearly as bad), in mere ignorance. This is particularly liable to occur to modern Archives which do not in their outward aspect suggest great importance (especially if already disordered by the enemy) and which are perhaps housed in eligible quarters in a place and at a time where quarters are urgently needed and difficult to find.

To meet such dangers or palliate their results the Archives' or Monuments' Officers, however active in personal survey, have had to rely largely on co-operation first with the officers of advanced Intelligence and other formations, then with those of Military Government or Control Commission, and ultimately with Italian Officials. In these later stages comes the final difficulty of civil disorganization and the not unnatural apathy of minor officials whose whole world has crashed about their ears. It may be necessary to suggest with some insistence that pending the replacement of windows snow need not be allowed to lie on the top of volumes; that the leaking lavatory in the Prefect's office should be repaired as a work of urgency in view of the presence of Archives underneath; that while the roof is missing early registers on the top floor could be transferred to the offices below; that if *epurazione* has banished the Archivist the keeper of the Museum might temporarily carry on; even that scattered papers can be picked up from the floor and wet ones hung out to dry. The examples are taken at random from a dozen towns in Southern Italy and Sicily.

The task of taking stock, of getting in reports and of reorganizing in something more than piecemeal fashion, was greatly facilitated, once Rome was reached, by the existence in Italy of an admirable organization under which the Minister and Director at the capital,

working through a system of regional Superintendents and Heads of *Archivi di Stato*, can control and activate Officials and even Owners of a large proportion of the country's Archives. To set this machinery in motion again was now a major objective and accorded with the Commission's general policy of using, wherever possible, existing organizations. Fortunately the task proved comparatively simple, for most of the Archivists were at their posts or prepared to return to them; only communications were lacking and these the Archives Officers were able to suggest or supply. Most important of all, the Head of the Italian Archives' Service had stayed in Rome and was both able and anxious to co-operate in every way. By November the system was so far restored that all questions of policy and personnel were being decided at Rome by the appropriate agencies; and even at Florence the Superintendent was communicating with the local authorities in his area through Italian channels. It is perhaps not too much to hope that from the present reorganization may result a general survey of Italian Archives as they stand at the conclusion of the war. This would be a really valuable piece of constructive scholarship, particularly if, by collaboration with the Vatican Authorities (with whom also the Archives' Officers have been in touch), it could be made to include Ecclesiastical Archives; the administration of which is independent of the State. In any case something has been done to repair the mischief of War in this field; and present relations with Italian Archivists recall those between Bonaini and his English correspondents nearly a hundred years ago.

HILARY JENKINSON.

CRETAN ANTIQUITIES AND THE WAR

The following reports have been issued by the War Office, with permission to print.

The antiquities of Crete have suffered much less than might have been expected considering the fighting that took place in the island.

The Palace of Knossos and the surrounding ruins were officially protected by the Germans and are undamaged; excavations carried out by Germans in the Little Palace area did not penetrate deeper than the Roman stratum. A number of objects from the Villa Ariadne and from the stratigraphical museum were carried off by General Ringel who commanded the German forces in Crete. In Candia (Iraklion) the Museum was damaged by German bombing in 1941 and 8 large Minoan *pitthoi*, 3 *kalpai*, 28 *sarcophagi* and 3 *larnakes* were broken. The more valuable antiquities had been stored in safe-keeping and examination in June 1942 proved them to be intact. More damage both to the fabric and to some of the remaining objects was caused by bombing in February 1944 and again in June of that year by the explosion of an ammunition-ship in the harbour. But the stored objects have apparently not suffered at all. Bombing did much harm to the town of Iraklion; the Venetian church of St. Mark, the Armeria and the Venetian loggia were destroyed and other Venetian buildings, especially the walls of the fortification, were damaged.

At Gortyna the German troops broke large pavement-slabs in the Praetorium and destroyed the brick facing of Roman walls, as well as doing damage to the walls and floor of the Nymphaeum; they wrecked by demolition-work the entrance to the ancient quarry called 'the Labyrinth' but were careful not to ruin the interior. A little local digging seems to have been innocuous. In 1941 a few objects (a Roman statue of a nymph, a Hellenic grave-relief and two small heads) were removed from the Museum, probably by order of General Ringel.

At Phaestos, the Palace hill was fortified by the Germans but the pits and trenches caused only insignificant damage. *Pitthoi*, gypsum slabs, etc., in the Middle Minoan

magazines were damaged by German troops, and some small vases were stolen from a show-case in the magazine.

At Ag. Triadha there was considerable destruction of gypsum pavements, wall-slabs and benches : the Germans removed some stones by car and broke some *pithoi*, removed stones from the Tomb of the Polychrome Larnax and damaged the great *tholos* (which was included in a camp occupied by Greek prisoners of war).

At Sitia the Italian troops destroyed (or removed) 120 objects in the museum, including 2 Minoan *rhyta*, some fine Greek vases and the contents (amongst them 3 sarcophagi) of an LM3 *tholos* tomb excavated by M. Platon at Akhladha, some inscriptions and some Greek and Venetian reliefs. While making slit-trenches in the town they came on an LM3A tomb and partially cleared it, the remainder of the contents being salvaged by M. Platon. At Palaiokastros Sitias the Minoan remains were deliberately destroyed by the Italians, who systematically removed them stone by stone.

At Isopata the Royal Tomb, though scheduled by the German Command, was destroyed late in 1941, the troops carrying off the stones to build defences for coastal guns. A small rectangular built tomb in the neighbourhood has been damaged.

At Amnisos, in the ' Villa of the Lilies ', German troops committed wanton damage to pavements, colonnades and a staircase. There was similar but less serious vandalism, and some minor looting, at Megaron Nirou and at Malia, in the palace and cemetery, where the two altars of Khrysolakke were damaged.

At Ierapetra the museum was badly looted by the Italians ; about one-third of the collection was stolen and other objects were broken : the missing objects include some *Bugelkanne*, Greek vases, Roman lamps, a bronze axe, etc. The remainder of the collection was subsequently moved to Iraklion for safety.

At Neapolis, Tyllissos and Gournia there was no loss or damage.

GREECE, MONUMENTS AND FINE ARTS

Reports have been received from the Department of Fine Arts and Antiquities covering the period from the time of the landing of British troops up to 31 December 1944. The first report was necessarily of a provisional character ; it announced that the major antiquities were generally speaking unharmed, the contents of the greater museums safely stored, and rumours that had been spread of looting or destruction either exaggerated or altogether false, e.g., the bronze charioteer from Delphi, reported to have been stolen, was in safe keeping in the National Museum at Athens. German troops were ordered to respect the classical antiquities and these orders were on the whole obeyed. A number of cases of minor theft and one or two of more important acts of looting were reported with due reserve pending more thorough investigation. The second report virtually covers the period of hostilities and describes such damage as resulted therefrom.

CLASSICAL MONUMENTS

Athens : The Acropolis. Thirty-two ELAS mortar bombs or shells had exploded on the Acropolis area but very few had succeeded even in bruising the marble. The Parthenon received two direct hits, one, on the stylobate in the centre of the south side, which scarred the vertical surface over an area of four square feet, the other on the third column of the western peristyle from which a splinter of about two square feet was detached. • No damage was done to the Erechtheum, Propylaea and Temple of Nike Apteros other than a few minor splinters two or three inches across which were flaked

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off by adjacent explosions. In the preparation of defence-works our troops piled up round the perimeter a number of the loose blocks scattered over the area ; they also took one slab from the floor of the western peristyle and some pieces from the adjacent wall. These can of course be replaced.

The Acropolis Museum. All the more valuable objects had been walled up in caves under the Acropolis near the ' prison of Socrates ', or deposited in the vaults of the Bank of Greece.

Of those left *in situ*, one metope of the Parthenon and a clay figure (6th cent. hydrophoros) had been smoke-blackened and a funerary stela with bas relief had been stained by spilt ink ; a few small terracottas may possibly be missing, but this is not yet certain. The Museum buildings, which had been occupied by the troops, were dirty but undamaged.

The buildings in the city—the Theseum, the Tower of the Winds, the Agora, Ceramicus, the Arch of Hadrian and the monument of Lysicrates, were reported intact on 30 November. The report of 31 December states that any damage to them is, so far as is known, negligible.

The National Museum has received only slight damage and its contents are all safe. The Lion Gate at Mycenae and the Treasury of Athens are reported to be undamaged.

During their occupation the Germans carried out regular excavations at Olympia ; all finds were removed to Germany.

BYZANTINE MONUMENTS

At Athens the Byzantine Museum is in excellent order.

The three important Byzantine churches in Athens (Ag. Elevation, Karnikarea and Ag. Theodori) are all intact except for a few bullet-chips in the brick-work ; none of the reliefs or inscriptions built into the wall have been damaged. The church at Daphnae requires some repairs to its dome, but the mosaics are perfectly preserved. The 5th century mosaics in the floor of the ruined basilica at Ag. Isidoros in Khios are exposed to the elements and are in a bad state of preservation. Some damage is reported to Ag. Apostolos and Krina in Khios, to the Byzantine city of Mistra and to the churches of Agia Lauria and of Kalebakia, of Kastoria (the dome of the Koubelitissa) and Nicopolis, and to the Meteora monasteries, which are said to have been saluted by the Germans at the time of their withdrawal with bursts of machine gun fire which damaged the dome of Ag. Stefanos. At Salonica the church of Agia Sofia was hit in 1941 but has been restored. The monastery of Osios Loukas near Levadhia was accidentally bombed by the Germans and its mosaics and frescoes somewhat flaked.

The British, American and French Schools of Classical Studies were safeguarded during the German occupation.

Extract from M. L. Greece Progress Report No. 11, 11 January to 18 January, 1945.

MONUMENTS AND FINE ARTS

1. The Theseum, Agora, Church of Ag. Apostoli and Tower of the Winds were inspected on 13 January.

The Theseum has received a number of bullet scars similar to those on the Parthenon. In addition one bar of a triglyph on the northern side has been broken, and a corner knocked off a plinth on the southern side.

The other three monuments are undamaged.

ANTIQUITY

2. The Keramikos museum and excavations were inspected on 15 January in company with the Chief Custodian M. Diamandis.

The forcing of the door of the Museum by our troops caused two chips each about 3 inches by 2 inches to be detached from the base of the marble Sphinx found by the Germans during the occupation. Demolitions by ELAS in the neighbourhood on 2 January broke most of the Museum windows and four reconstructed amphorae, damaging another.

In the excavations the railings by the main entrance in Piraeus Street were damaged by tanks making a detour round a road block. Several mortar bombs fell in the excavations during the fighting, but did not do much damage. Owing to the softness of the ground, a few unexploded bombs are to be found on or buried in the earth.

Greek troops had occupied the German workshops, but done no damage.

In the same area some slight damage to a sarcophagus and a large bas-relief was caused during fighting between Germans and Greeks before the arrival of British troops in the city.

3. The National Museum was visited on 17 January, and a rumour that ELAS had looted it was found to be false. No damage has been sustained by any of the antiquities.

Subscriptions

The Editors of ANTIQUITY would like to impress upon subscribers that under the restrictions still affecting the quantity of paper allowed for each number it is most important to know every quarter how many copies should be printed. This can only be shown by the subscriptions received, and the greatest help which can be given is to pay them as early as possible—certainly before the June number each year. It has always been the practice to send copies even if the payment has not been made, but this means sometimes that not only does the subscription fail to come, but that the copies posted deprive applicants who wish to have them. In such cases an intimation that further copies are not wanted would be helpful.

It is hoped that the subscriptions at present outstanding will be remembered, and sent without delay to

Roland Austin, 24 Parkend Road, Gloucester

Reviews

THE CREATIVE CENTURIES: A STUDY IN HISTORICAL DEVELOPMENT.

By HENRY JOHN RANDALL. pp. xxx, 410. London (Longmans), 1944. 17s 6d.

'The fundamental theorem of this book is that a capital distinction may be observed between the periods that were creative and those that were uncreative'. No archaeologically trained historian is likely to dispute the author's theorem. The interest and utility of a study focused on such periods should be no less generally admitted. Most will probably accept the corollary that a book dedicated thereto shall be a 'record of Man's achievement' and not a 'register of the crimes, follies, and misfortunes of mankind'. The selection of 'creative periods' may cause more qualms. Randall deliberately excludes prehistory. He admits indeed that the Neolithic 'was a distinctly creative period, perhaps more so than any of the periods here recorded'. But the prehistorian himself should be the first to admit that the archaeological data still fall far short of illuminating the circumstances and context of the 'neolithic revolution' with the clarity requisite for the sort of study here contemplated. The omission of the age that witnessed the creation of the Pharaonic and Sumerian States is more questionable; that age is no longer strictly prehistoric. A good case too could be made out for hailing as creative the three centuries from Shulgi to Hammurabi. In any case failure to appreciate the positive achievement of the historical Orient during the Bronze Age encourages the author to exaggerate—or rather to repeat current exaggerations of—the originality of (for instance) Greek science and Roman law. The five periods chosen, however, will hardly be challenged though their delimitation might be questioned.

The first is classical Greece, essentially 5th century Greece, and the achievements selected for special appreciation are in the domains of philosophy, science, history, politics and art. Next comes the Roman Empire, establishing the peaceful unity of civilization, roads, baths, buildings and—by no means least—law, and permitting the birth and spread of Christianity to the foundation of an 'Imperial Church'. Thirdly the 12th and 13th centuries of our era are happily styled 'the flowering of the Middle Ages'; they witnessed the creation of Gothic architecture, the founding of the great universities, the birth of Common Law and the consolidation of parliament in its distinctively English form. The Renaissance is the obvious fourth member in the series: as its products are hailed the modern State and the Reformation as well as the rebirth of science, the revival of learning and the great navigations. Finally, period V covers the industrial revolution of the 18th century and the intellectual revolution that ensued in the 19th. In the first division the author admirably retells the story of the steam engine, of the mechanization of the textile industries, of the rise of the Coal and Steel Age, of transport from turnpikes to railways and of the agricultural 'improvement'. But this time he draws no veil over the dark side—slums, poverty, exploitation. It will be gratifying to all readers of *ANTIQUITY* that Randall selects as decisive in the intellectual movement not the mechanistic philosophy, but the new historical outlook inspired by Darwin, Huxley, Lyell, Lubbock, Maine and Tylor (but it is surprising that Marx's name is omitted since his *Contribution to the Critique of Political Economy* also appeared in 1859).

For each period the political and economic context is recapitulated—including for I and II the campaigns of Marathon and Actium. Then the respective achievements are unfurled impressively and with great sympathy and judgment. Particularly

profound and striking are the chapters on Roman Law (19), on equity (30), on parliament (31) and on 19th century historiography (40). Equally commendable is the courageous objectivity of the account of the rise and spread of Christianity that strikes a happy mean between the contemptuous hostility of Gibbon and the timid traditionalism of most professional historians.

Reviewing this book in ANTIQUITY where its author has so conclusively demonstrated his competence in evaluating archaeological evidence, I cannot refrain from expressing regret that in this comprehensive work he has not used such evidence more consistently. It would have allowed a more Marxian approach and might even have suggested a pattern such as Randall confesses himself unable to find in history. Four at least of his creative periods comprise or are preceded by technological inventions or advances that in effect placed at the disposal of the societies concerned really new forces of production.

In chapter II indeed Randall does very worthily underline the significance of the agricultural revolution associated with the olive and the vine in Classical Greece. But he says nothing of the technological revolution that had provided Greek craftsmen with a variety of specialized and standardized tools, undreamed of, not only by their Bronze Age forerunners, but, apparently, also by their contemporaries in the Iron Age Orient. Admittedly the evidence is rather hard to come by, but enough is available at least in the case of metal-work and the building trades to justify the term 'revolution'. In its light the political achievements, extolled in chapter VII, acquire a new significance as reflexions of relations of production adequate to the new forces. But the tide of technological progress that had started about 600 B.C., did not cease to flow in 400 B.C. but culminated in Hellenistic times with the harnessing of water-power. Now, it is arguable that Imperial Rome was merely the heir of Hellenistic technics and that she failed to develop their potentialities because relations of productions, based on slavery or the colonate, had turned into fetters on production. It is equally arguable that the Imperial age was not creative in science, philosophy, literature or art and that even in road-building, bathing, administrative organization and law it was largely imitative rather than original. At the same time purely archaeological evidence discloses even in the 1st century the seeds of that economic decay that on the same evidence Randall describes in the 3rd.

On the other hand precisely in the 12th and 13th centuries—the third creative period—the water-power, that Rome's economy was unable to exploit, was being set to work new productive processes; windmills were being built for the first time; and there is at least inferential evidence for a multiplication of craft tools comparable to that noted in 6th century Greece. At the same craft guilds, that Randall mentions no more than the new machines and tools, were being perfected to afford relations of production within which the new forces could function. In the two remaining periods the technical inventions of the 16th and 18th centuries are familiar and are duly recorded here.

V. GORDON CHILDE.

PREHISTORIC BRITAIN. By JACQUETTA and CHRISTOPHER HAWKES. *Pelican Books*, A115. *Penguin Books*, 1943. pp. 136. 9d.

In this small volume it cannot be said that any new facts are brought to light; but the available material is presented in a new and interesting manner. Throughout stress is laid on the woman's point of view, on the reaction of the various developments of culture on the everyday life of the housewife. In addition to this feminist aspect the book is considerably enhanced by the judicious and attractive use of legitimate imagination; and this is rightly so, for *Prehistoric Britain* is not intended for specialists (though

such can read it with pleasure) but rather for the general intelligent and educated layman. In this respect we consider that Mr and Mrs Hawkes have rendered a signal service to the cause of archaeology in general; for if it is the archaeologist who calls the tune it is the layman who pays the piper, and it is incumbent on the professional to make available to the public in readable and intelligible form the results of his researches.

Matters such as the effect of climate on settlement and the importance of the Atlantic Trade Route for the earlier metal-using periods might have been stressed somewhat more, and the importance of the local routes up and down the Irish Sea coast of Britain is not clearly indicated. Also, it seems rather a pity that Ireland's role in Megalithic and Early Bronze Age Britain was not defined, for we consider that the statement (p. 13) that 'the British highlands . . . walled her off from England and the Continent' to be hardly true in view of the predominance of the Atlantic Route and of the demonstrable importance of the Tyne and Midland Gaps for Hiberno-British intercourse. Again, the Irish evidence in favour of a Late Bronze Age dating for the rotary quern seems to have been overlooked. But possibly one day a companion volume, perhaps from the able pens of Mr and Mrs Hawkes who know the Irish material so well, may take its place beside *Prehistoric Britain*.

The illustrations are good, but for a popular work we would welcome more (though we realize how necessary war restrictions render such a course difficult) and we should also like to see scales used in all cases: for though familiar to specialists most lay readers have no knowledge of the sizes of the objects reproduced. JOSEPH RAFTERY

PERUVIAN ARCHAEOLOGY IN 1942. By A. L. KROEBER. *Viking Fund, Publications in Anthropology*, No. 4. New York, 1944. 152 pp., 48 plates, 8 figs. \$3.00.

Dr Kroeber spent two months of 1942 in Peru for the Committee on Inter-American Artistic and Intellectual Relations, apparently an official body, and this report is the result. His visit consisted of a stay in Lima and a quick trip through the coast from Arequipa to Lambayeque; besides meeting Peruvian archaeologists and Uhle, who has returned to Peru in his old age as the guest of the nation, he had the advantage of the presence of several North American archaeologists who were taking part in expeditions for the Institute of Andean Research. The book is full of good things, of which only a few can be touched on here. It comprises not only what was seen during the trip, but also discussions of recent discoveries in other parts of Peru, both coast and Sierra, and some timely summaries of Uhle's unpublished material at the University of California. It is indispensable to anyone who is trying to follow current developments in South American archaeology, and not the least of its merits is the provision of excellent illustrations of important material which has not been figured before.

It has hitherto been almost impossible, owing to lack of material, to study Tello's great discovery of Paracas except in Peru, so a feature of particular value in the report is an account, with illustrations of pottery and textiles, of the excavation of Paracas-Cavernas material at Ocucaje in the Nazca region. Now we have at least some idea of what Paracas-Cavernas pottery looks like. There is a necessary prelude in the shape of a brief description of Paracas itself, emphasizing the distinction, which is often lost sight of, between Paracas-Cavernas and the later Paracas-Necropolis, which yields the famous textiles.

La Estaqueria in the Nazca valley, described as a 'wooden Stonehenge', promises at first sight to be a sensational discovery, but proves to be disappointing. The main part of the site consists of twelve rows of twenty algarroba trunks arranged in a rectangle on a low adobe platform, so to associate it with the name of Stonehenge, or for

that matter Woodhenge, is to give quite a false impression of the plan. The age is uncertain, though Kroeber is probably right in assigning it to a pre-Spanish period, and it is to be hoped that someone will try dendrochronology on it, although Kroeber himself suggests that this may not work on trees which have grown under such arid conditions. The forked ends of most of the posts give a strong indication that they were meant to carry beams supporting some kind of roof, no traces of which appear to have survived.

It has generally been believed that the shell-mound culture discovered by Uhle at Ancon and Supe belonged to primitive fisher-folk. This has caused some perplexity of late in view of a growing opinion that the pottery is identical with that of Chavin, but Kroeber now corrects the traditional view by publishing for the first time an account of Uhle's non-ceramic material at the University of California. This shows that the culture included agriculture, and by inference irrigation, dogs, spinning, weaving, embroidery, netting, basketry and carving in bone and wood. The link with Chavin is greatly strengthened by a remarkable engraving on bone, showing a crab with a mouth of Chavin character.

Attention is called to Rafael Larco's important discoveries of the Cupisnique and Salinar cultures in the Chicama region of the North Coast, and his view of their pre-Mochica age provisionally accepted, but readers are referred to Larco's own publication for description and illustration. There is a single copy of this in Great Britain at present, but it is very doubtful if there are any more, so the cultures remain virtually unknown.

The last chapter gives a summary of Kroeber's present views about the chronology of the Peruvian cultures, in which he points out that the various local cultures have been related in time by means of the widespread Inca and Tiahuanaco styles. To these he adds Chavin, and makes the interesting observation that all three horizon markers are of highland origin. He now suggests that negatively painted pottery, which has turned up lately in pre-Tiahuanaco deposits in various parts of the coast, may prove useful in the same way. I believe that this suggestion creates more difficulties than it solves, and am extremely doubtful if negative painting can be used as a widespread horizon marker at all. Kroeber himself points out the conflict with other evidence which the acceptance of a negative horizon involves, since it puts Paracas-Cavernas after Nazca instead of before, and Nazca considerably later than Mochica instead of contemporary or older. Further, it can be shown that negative ware is not all of one age. The coastal types are all pre-Tiahuanaco, but examples can be cited from Tiahuanaco itself. In Ecuador it occurs in highland cultures of various ages, including those in which Jijon y Caamaño sees, with reason, Tiahuanaco influence, and I have found it in a coastal culture in which it is difficult to see any Peruvian affinities whatever. There seems to be good reason to connect the Recuay type with that of Tuncahuan in Ecuador, on the basis of the use of red as an extra colour, and both these are probably related to that of Gallinazo on the Peruvian coast for the same reason, but beyond this I would not go at present.

Amid all its wealth of information, there runs a sad refrain through the book, namely that Tello knows so much more than all the rest of us put together but he can't be persuaded to publish the data on which he bases his theories. Our debt to Dr Kroeber is already large, but it will be greatly increased if his tactful suggestions will induce Tello to issue detailed, illustrated, reports of his field work.

G. H. S. BUSHNELL

SAINT INDRACT AND SAINT DOMINIC. By CANON G. H. DOBLE, D.D.
Reprinted from the Somerset Record Society's Collectanea III, 1944. 24 pages.

Canon Doble has again placed us in his debt by giving an account of the lives of these two saints, based largely on unpublished materials. Being by force of circumstances

cut off from the books and maps I cannot follow up as closely as I should wish some of the interesting lines of enquiry which it suggests, much less review it adequately. But it seems worth while giving publicity to a few remarks in what is rather an 'open letter to the author' than a review.

The sources of our knowledge of Indract are late, but seem to embody an early tradition. 'St. Indrahte' is first mentioned, coupled with Saint Patrick, in an early 11th century manuscript; and William of Malmesbury records that, on either side of the altar of the old church at Glastonbury stood 'two pyramids' in honour of these two saints. Canon Doble gives, unfortunately in the form of an English translation only, the text of a life of St. Indract (Bodleian, Digby MS. 112) the original of which is a translation into Latin from a lost Old English original, possibly contained in a 'Passionale Sanctorum, anglie script.', which was in the Glastonbury Abbey library in 1248. This assigns the saint's death to the reign of Ina (which ended in 726). The gist of the story is that, after they had departed from Glastonbury on their way back to Ireland, Indract and his companions were murdered by a robber band, led by a certain Huna. Various places are mentioned in connexion with the murder, and they are not all identifiable; but the 'villa' called 'Pedred' where King Ina was then residing must surely have been Somerton, and there seems no objection to connecting Huna with Huntspill. If these and other identifications are correct, we may infer that Indract and his party were making for a port on the Bristol Channel near the mouth of either the Parrett or the Brue, from whence they would take ship. But it is most unlikely that they would have gone thence by sea direct to Ireland; it is far more likely that they would have made the short crossing to South Wales and proceeded thence, either by the Roman road along the coastal plain towards St. David's, or in a coasting vessel. I have already (1) given facts in support of the theory that the Dark Age monastery of Llaniltydd (Llantwit) owed its importance and wide culture to its position near a Channel ferry-port at the mouth of the Thaw near by. I would now suggest that it was at the mouth of this river that Indract disembarked, as recorded in *Nova Legenda Anglie*, on his outward journey to Rome. The name of the place, as printed in 1516, was spelt 'Tamerunta', an impossible form, which I would emend 'Tauiemutha', i.e. Aberthaw (2). That seems more credible as a landing-place for an Irish voyager than the mouth of the Tamar on the *south* coast of Cornwall, nor am I convinced by Canon Doble's arguments for a Cornish connexion of any kind.

But whether this last suggestion be acceptable or not, we now see Glastonbury quite clearly as a focus of Irish travel, the first important place encountered in England on the pilgrimage to Rome and the last passed through on the return. It was the Bristol of the Dark Ages. Essentially it is not, in our view, an island—actually it could never have been such—but rather an outpost of the mainland connected with the sea by a natural causeway (the Polden ridge). Possibly it began to be important when the pilgrim's route from Christian Ireland to Rome resumed an easterly course, made possible by the opening up of Southern England again. For, as I have suggested in 'Custom is King', that is the normal route, and it was only the ravages of the heathen during the 5th and 6th centuries that blocked it and caused the use, or revival, of an all-sea, or mainly sea,

¹ In Dr Marett's 'Festschrift', *Custom is King*; chapter on 'Western Seaways'.

² The old name of the river on which Llaniltydd (Llantwit) stands was NADAUAN (see o.s. Dark Ages map). This can hardly have produced the modern 'Thaw', and we must suppose that this form, which occurs elsewhere in Wales, is an alternative name, and that one or other may have been the name of a tributary stream. Such confusion and transference is not uncommon in the case of rivers.

route by Cornwall, Brittany and the Loire (3). The Irish connexions of 'Glastonbury of the Gaels' have always been recognized; and geography provides a perfectly rational setting. Glastonbury looks westwards, and the evidence of place-names round it (e.g. Beckery Farm=Beg Eriu, little Ireland) suggests that some of those who came to it from Ireland remained there as settlers. The fenland lying to the west has many resemblances to parts of Ireland, not least in the extensive deposits of good peat; and it is well known that immigrants tend to settle in regions resembling the homeland (e.g. in America). This tendency may have been encouraged; surely it is significant that the 'two pyramids' beside the altar (the place of honour) were both dedicated to the memory of Irish saints? May their erection not have been designed to offset the bad effect of what was no doubt regarded in all Christian lands as an outrage, if the murder of the returning pilgrims was, as it seems, an actual historical event?

Sir Alfred Clapham has suggested that these 'pyramids' were in fact carved crosses of a type well represented in the North about 700-800. His suggestion is confirmed, we think, by the story of a miracle, related in the Digby manuscript. An old man emerged from the 'pyramid' of St. Indract, 'holding a book in his hand'. He was tall and tonsured. Now figures holding books are fairly common on these northern crosses (e.g. Heysham, Halton, Hoddon), and it looks as if the story may have originated in this way from the carving on the 'pyramid'.

Canon Doble's essay contains much else that will interest students; for me, as will have been apparent, its chief interest lies in the Glastonbury associations of St. Indract. For Glastonbury is placed in a region of geographical extremes, ranging from the limestone plateau of the Mendips to fertile agricultural lands and fen-margins. The whole region is extremely rich in prehistoric remains (there are more lake-villages awaiting discovery and excavation), and it is well supplied with early topographical documents. In spite of the scholarly labours of Bulleid, Gray, Armitage Robinson and others, it is still in some respects an almost virgin field. It needs someone who will do for it what Henderson would have done for Cornwall, had he lived. A rich harvest is waiting to be reaped; but the labourers are few. O.G.S.C.

³ Since writing this I have discussed the matter with a friend who thinks it unlikely that there would have been Irish pilgrimages to Rome at this date. He reminded me of the fact that Irish missionaries, on the other hand, did come over to Britain and the Continent in considerable numbers. This may equally well be adduced in support of my thesis.